



LAPORAN TAHUNAN

1990-91

UNIVERSITI PERTANIAN MALAYSIA

UNIVERSITI PERTANIAN MALAYSIA

LAPORAN TAHUNAN 1990-91

KOLEKSI ARKIB U.P.M.

KANDUNGAN

Laporan Naib Canselor.....	1
Fakulti Pertanian	22
Fakulti Perhutanan	31
Fakulti Kedokteran Veterinar Dan Sains Peternakan.....	35
Fakulti Ekonomi Dan Pengurusan	41
Fakulti Pengajian Pendidikan	44
Fakulti Kejuruteraan	51
Fakulti Sains Dan Pengajian Alam Sekitar	57
Fakulti Perikanan Dan Sains Samudera	77
Fakulti Sains Makanan Dan Bioteknologi	83
Kampus Bintulu	88
Pusat Pengembangan Dan Pendidikan Lanjutan	95
Ladang	97
Perpustakaan	99
Pusat Komputer	105

LAPORAN NAIB CANSOLOR

MAJLIS

Mesyuarat

Majlis telah bersidang sebanyak enam kali untuk mesyuarat biasa (mesyuarat ke-90 hingga ke-95) sepanjang tempoh laporan, iaitu pada 26 Jun 1990, 14 Ogos 1990, 12 Oktober 1990, 4 Disember 1990, 12 Februari 1991 dan 9 April 1991.

Hal-hal Keanggotaan

Y. Bhg. Tan Sri Haji Hashim bin Aman, yang telah tamat tempoh lantikan beliau sebagai Pengerusi Majlis, telah dilantik semula bagi tempoh selama tiga tahun lagi mulai 9 November 1990. Majlis juga mengalu-alukan perantikan Encik Mat Yasir bin Juli sebagai wakil tetap Ketua Setiausaha Perbendaharaan dalam Majlis.

Tahniah

Majlis merakamkan ucapan setinggi-tinggi tahniah kepada anggota-anggotanya yang berikut, iaitu:

* Y.Bhg. Tan Sri Datuk Wira Abdul Rahman Arshad kerana dikurniakan bintang Sri Panglima Darjah Kinabalu (S.P.D.K.) sempena hari jadi T.Y.T. Yang Dipertua Negeri Sabah pada 16 September 1990; dan

* Y.M. Raja Tan Sri Muhammad Alias bin Raja Muhammad Ali kerana terpilih memenangi anugerah kebangsaan Yayasan Tun Abdul Razak bagi tahun 1991.

SENAT

Mesyuarat Senat

Sepanjang sesi 1990/91, Senat Universiti telah bersidang untuk 12 mesyuarat biasa dan 5 mesyuarat khas. Di antara perkara-perkara penting yang diputuskan ialah:

1. Bersetuju agar Yg. Bhg. Tan Sri Ong Kee Hui dikurniakan Ijazah Kehormat Doktor Peruratan dalam Majlis Konveksyen pada tahun 1990.
2. Menyokong perantikan 39 Persekutu Akademik bagi Fakulti Perhutanan selama tiga tahun.
3. Menyokong penubuhan Fakulti baru iaitu Fakulti Ekologi Manusia dengan cara menggabungkan Jabatan Pembangunan Manusia dan Jabatan Sains Kemasyarakatan yang sedia ada di UPM.
4. Meminda draf Statut Universiti Pertanian Malaysia (Ijazah dan Diploma) 1991.
5. Meminda draf Peraturan-peraturan Penubuhan dan Pengurniaan Hadiah Universiti.

Bil. Pemeriksa/Penilai Luar

Senat telah melantik seramai 32 orang Pemeriksa dan/atau Penilai Luar bagi program-program Bachelior sebagaimana berikut:

Bil.	Pemeriksa/ Penilai Luar	Dari	Program	Tempoh
1.	Prof. Werner Doppler	Univ. of Hohenheim, German	B.S. (Ekonomi Sumber)	1989/90-1990/91
2.	Prof. Thomas F. Weaver	Univ. of Rhode Island	B.S. (Ekonomi Sumber)	1990/91-1992/93
3.	Prof. Jean Louis Floriot	France	B.S.(Perniagaantani)	1990/91-1991/92
4.	Prof. F.L. Clarke	Univ. of Newcastle, Australia	B. Perakaunan	1990/91-1992/93
5.	Prof. David R. Lindsay	Univ. of Western Australia	Doktor Perubatan Veterinar	1988/89-1990/91
6.	Prof. Donald L. Dungworth	Univ. of California USA	Doktor Perubatan Vetrinar	1988/89-1990/91
7.	Prof. Neil Gorman	Univ. of Glasgow, Scotland	Doktor Perubatan Veterinar	1988/89-1990/91
8.	Datuk Dr.Ahmad Mustafa	Kementerian Pertanian Malaysia	Doktor Perubatan Veterinar	1988/89-1990/91
9.	Prof. Raymond George Wales	Murdoch Univ. Australia	Doktor Perubatan Veterinar	1989/90-1991/92
10.	Prof. Ernest J.L. Soulsby	Univ. of Cambridge, U.K.	Doktor Perubatan Veterinar	1989/90-1991/92

11.	Prof. David Ernest Noakes	Univ. of London United Kingdom	Doktor Perubatan Veterinar	1989/90-1991/92
12.	Prof. A.K. Kochhar	Univ. of Bradford, United Kingdom	B.K.(Mekanikal/ Sistem	1988/89-1990/91
13.	Prof. Ronald McCaffrer	Loughborough Univ. of Technology, U.K.	B.K.(Awam)	1989/90-1991/92
14.	Prof. Joe Todd Clayton	Univ. of Massachusetts, USA	B.K.(Pertanian)	1990/91-1992/93
15.	Prof. Robert M. Peart	Univ. of Florida, USA	B.K.(Pertanian)	1990/91-1992/93
16.	Prof. David John Creasey	Univ. Birmingham, U.K.	B.K.(Elektronik/ Komputer)	1990/91-1992/93
17.	Dr. Mashudi Haji Kader	Univ. Sains Malaysia	B. Pend.(Pengajaran Bahasa Malaysia Sebagai Bahasa Pertama)	1988/89-1990/91
18.	Prof. William Drake	Cornell Univ., USA	B.Pend. (Sains Pertanian)	1988/89-1990/91
19.	Prof. Roderick A. Jacobs	Univ. of Hawaii at Manoa	B. Pend.(Teaching of English as a Second Language)	1989/90-1991/92
20.	Prof. Ian Stewart Ferguson	The Univ. of Melbourne, Australia	B.S. Perhutanan	1988/89-1990/91
21.	Prof. T.R. Parson	Univ. of Boulevard, Canada	B.S. (Perikanan)	1989/90-1991/92
22.	Prof. J.J. Goering	Univ. of Alaska, USA	B.S. (Perikanan)	1989/90-1991/92
23.	Prof. Jacques C.J. Nihoul	Univ. of Leige, Belgium	B.S. (Perikanan)	1989/90-1991/92
24.	Prof. G.S. Khush	Inst. Rice Research Institute, Manila	B.S. (Pertanian)	1988/89-1990/91
25.	Prof. Linda Jean Nelson	Michigan State Univ. USA	B.S. (Pembangunan Manusia)	1988/89-1990/91
26.	Prof. Salvatore J. Locascio	Univ. of Florida, USA	B.S. Hortikultur	1989/90-1991/92
27.	Prof. D.J. Evans	Loughborough Univ. of Technology, U.K.	B.S. Komputer	1988/89-1990/91
28.	Prof. Hisashi Sumitomo	Univ. of Kyoto, Japan	B.S. (Alam Sekitar)	1990/91
29.	Prof. S. Radhakrishna	Indian Inst. of Technology, India	B.S. (Kep.) (Fizik)	1990/91
30.	Dr. Mary D. Earle	Massey Univ., New Zealand	B.S. & Tek. Makanan	1988/89-1990/91

31. Prof. Llyod Bullerman	Univ. of Nebraska, USA	B.S. & Tek. Makanan	1989/90-1991/92
32. Prof. Lowell D. Satterlee	Pennsylvania State Univ. USA	B.S. & Tek. Makanan	1990/91

Pemenang-penang Hadiah

Pemenang-pemenang hadiah peringkat Universiti ialah:

Pemenang	Hadiah	Syarat Kurniaan
Mohd. Tajudin bin Md. Niggal, graduan B. Pendidikan (Bimbingan & Kaunseling)	Pingar Emas Canselor	Graduan yang terbaik pada keseluruhannya dalam program Bachelo.
Ruzihan bt Jantan, graduan B.S. Ekonomi Sumber)) Anugerah Pelajaran) DiRaja)))	Graduan Melayu dan graduan-graduan bukan Melayu terbaik dalam program Bachelo.
Kwan Yuk Kwaun, graduan Doktor Perubatan Veterinar)))	
Ong Chong Guan, graduan B.S. Pertanian	Pingat Emas Alumni	Graduan yang terbaik dari segi akademik dalam program Bachelo.
Fatimah Bariah bt Omar, graduan B.s. & Tek. Makanan	Pingat Emas Wanita UMNO	Graduan wanita terbaik dari segi akademik dalam program Bachelo
Chua Sook Yan, graduan B.S. dengan Pendidikan (Kep.)	Hadiah Kementerian Sains, Teknologi dan Alam Sekitar	Projek terbaik tahun akhir pengajian peringkat Bachelo.
Zeenathul Nazariah bt. Allauddin, pelajar tahun pertama Doktor Perubatan Veterinar	Hadiah Syed Kechik	Pelajar bumiputera terbaik dari segi akademik pada peringkat 'Bongsu' (dengan syaat mengambil sekurang-kurangnya 30 kredit).

Penghargaan

Senat merakamkan setinggi-tinggi penghargaan kepada 3 orang Profesor yang telah bersara daripada perkhidmatan Universiti atas khidmat dan sumbangan mereka sebagai anggota Senat sepanjang perkhidmatan mereka dengan UPM. Mereka ialah:

Profesor Dr. Mohd. Zain bin Haji Abdul Karim
Profesor Dr. K.T. Joseph
Profesor A'amir Nordin bin Mohd. Arifin.

KEMASUKAN DAN REKOD PELAJAR

(a) Program Pengajian

Pada sesi 1990-91 Universiti Pertanian Malaysia telah menawarkan program-program di peringkat Master dan Doktor Falsafah, 24 program di peringkat Bacelor, lapan program di peringkat Diploma, dua program Matrikulasi dan satu program Pendahuluan. Senarai penuh program yang ditawarkan ialah seperti berikut:

Pengajian	Kampus
Master Sains	Serdang
Master Sains Pertanian	Serdang
Master Kejuruteraan (Pertanian)	Serdang
Master Sains Veterinar	Serdang
Master Sains dan Teknologi Makanan	Serdang
Master Pentadbiran Perniagaan	Serdang
Doktor Falsafah	Serdang
Doktor Kejuruteraan (Pertanian)	Serdang
Doktor Sains Veterinar	Serdang

Jangkamasa untuk Pengajian Siswazah adalah seperti berikut:

Program Master penuh masa	2 - 6	semester
Program Master separuh masa	4 - 10	semester
Program Doktor Falsafah penuh masa	4 - 10	semester
Program Doktor Falsafah separuh masa	6 - 12	semester

Program Bacelor	Jangkamasa	Kampus
Doktor Perubatan veterinar	8 semester	Serdang
Bacelor Sains Pertanian	8 semester	Serdang
Bacelor Sains Pertanian	8 semester	Serdang
Bacelor Sains Perhutanan	8 semester	Serdang
Bacelor Sains (Perniagaantani)	8 semester	Serdang
Bacelor Sains (Ekonomi Sumber)	8 semester	Serdang
Bacelor Sains (Kepujian)	8 semester	Serdang
Bacelor Sains (Alam Sekitar)	8 semester	Serdang
Bacelor Sains dan Teknologi Makanan	8 semester	Serdang
Bacelor Sains (Pembangunan Manusia)	8 semester	Serdang
Bacelor Sains Perikanan	8 semester	Serdang
Bacelor Pendidikan (Sains Pertanian)	8 semester	Serdang
Bacelor Pendidikan (Sains Rumahtangga)	8 semester	Serdang
Bacelor Pendidikan (Pendidikan Jasmani)	8 semester	Serdang
Bacelor Pendidikan (Bimbingan dan Kaunseling)	8 semester	Serdang
Bacelor Pendidikan (Pengajaran Bahasa Malaysia sebagai Bahasa Pertama)	8 semester	Serdang
Bacelor Pendidikan (Pengajaran Bahasa sebagai Bahasa Kedua)	8 semester	Serdang
Bacelor Sains Komputer	8 semester	Serdang
Bacelor Kejuruteraan (Awam)	8 semester	Serdang
Bacelor Kejuruteraan (Pertanian)	8 semester	Serdang
Bacelor Kejuruteraan (Mekanikal/Sistem)	8 semester	Serdang
Bacelor Kejuruteraan (Elektronik/Komputer)	8 semester	Serdang
Bacelor Perakaunan	8 semester	Serdang
Bacelor Sains Hortikultur	8 semester	Serdang

Program Diploma, Pendahuluan dan Matrikulasi

Diploma Pertanian	6 semester	Serdang
Diploma Kesihatan Haiwan dan Pertenakan		Bintulu
Diploma Perikanan	7 semester	Serdang
Diploma Pembangunan Manusia	6 semester	Serdang
Diploma Kejuruteraan Pertanian	6 semester	Serdang
Diploma Perhutanan	6 semester	Serdang
Diploma Sains Komputer	6 semester	Bintulu
Diploma Perniagaantani	6 semester	Serdang
Program Pendahuluan	6 semester	Bintulu
Matrikulasi Sains	2 semester	Bintulu
Matrikulasi TESL	4 semester	Serdang
	4 semester	Serdang

(b) Pengambilan Pelajar

Bilangan pelajar baru yang diterima masuk bagi sesi 1990-91 mengikut peringkat pengajian adalah seperti berikut:

Pengajian Siswazah	107 orang
Program Bachelor	1974 orang
Program Diploma	1206 orang
Program Pendahuluan	93 orang
Matrikulasi Sains	532 orang
Matrikulasi TESL	52 orang

Jadual 1 menunjukkan taburan pengambilan pelajar baru bagi sesi 1990-91 mengikut program dan jantina.

(c) Pendaftaran Pelajar

Seramai 10,601 orang pelajar telah mendaftarkan diri pada Semester Julai dan 10,176 orang pada Semester Disember untuk mengikuti berbagai program yang terdapat di kampus Serdang dan Bintulu, (termasuk program pengajian siswazah. Jadual II, III dan IV menunjukkan taburan pelajar yang mendaftar untuk semua program bagi kedua-dua Semester sesi 1990-91 ini).

(d) Siswazah

Pada akhir sesi 1990-91 seramai 1694 orang pelajar telah tamat pengajian mereka dengan jayanya dan telah dikurniakan ijazah atau diploma masing-masing. Pecahan bilangan siswazah ini adalah seperti berikut:

Master Pentadbiran Perniagaan	13 orang
Master Sains Pertanian	5 orang
Master Sains	14 orang
Ph.D	6 orang
Bachelor	943 orang
Diploma	713 orang

Jadual V menunjukkan taburan siswazah mengikut program dan jantina bagi sesi 1990-91.

JADUAL1
TABURAN PENGAMBILAN PELAJAR MENGIKUT
PROGRAM DAN JANITNA BAGI TAHUN AKADEMIK 1990-91

Program	Lelaki	Perempuan	Jumlah
Diploma Pertanian (Serdang)	138	78	216
(Bintulu)	160	87	247
Diploma Pembangunan Manusia	44	69	113
Diploma Kesihatan Haiwan dan Peternakan	50	39	89
Diploma Perikanan	65	51	116
Diploma Perhutanan	96	22	118
Diploma Kejuruteraan Pertanian	68	39	107
Diploma Perniagaantani	51	62	113
Diploma Sains komputer	35	52	87
Matrikulasi Sains	271	261	532
Matrikulasi (TESL)	6	46	52
Pendahuluan	64	29	93
Jumlah Kecil	1048	835	1883
Bachelor Sains Hortikultur	78	57	135
Bachelor Sains Pertanian	90	72	162
Bachelor Sains (Pembangunan Manusia)	18	67	85
Bachelor Sains (Perniagaantani)	56	66	122
Bachelor Sains (Ekonomi Sumber)	41	54	95
Bachelor Perakaunan	29	54	83
Doktor Perubatan Veterinar	29	16	45
Bachelor Sains Perhutanan	45	7	52
Bachelor Sains dan Teknologi Makanan	5	53	58
Bachelor Sains (Kepujian)	134	174	308
Bachelor Sains (Bioteknologi)	15	25	40
Bachelor Sains (Alam Sekitar)	20	16	36
Bachelor Sains Komputer	31	36	67
Bachelor Sains Perikanan	47	9	56
Bachelor Kejuruteaan (Pertanian)	34	3	37
Bachelor Kejuruteraan (Awam)	41	7	41
Bachelor Kejuruteaan (Elektronik/Sistem)	51	8	49
Bachelor Pendidikan (Sains Pertanian)	27	1	52
Bachelor Pendidikan (Sains Rumah Tangga)	-	15	42
Bachelor Pendidikan (Pendidikan Jasmani)	39	29	29
Bachelor Pendidikan (Bimbingan dan Kaunseling)	35	21	60
Bachelor Pendidikan (Pengajaran Bahasa Malaysia		26	61
Sebagai Bahasa Pertama)	96	63	159
Bachelor Pendidikan (Pengajaran Bahasa Inggeris			
Sebagai Bahasa Kedua)	28	72	100
Jumlah Kecil	1023	951	1974

Master Sains Doktor Falsafah	70 7	28 2	98 9
Jumlah Kecil	77	30	107
JUMLAH BESAR	2148	1816	3964

JADUAL II
TABURAN PELAJAR MENGIKUT PROGRAM
SEMESTER TAHUN AKADEMIK 1990-91 (KAMPUS SERDANG)

FAKULTI	PROGRAM	SEMESTER I						SEMESTER II					
		TAHUN I	II	III	IV	V	J	I	II	III	IV	V	J
Ekonomi dan Pengurusan	Bac. Sains (Perniagaantani)	122	144	112	104	-	482	111	148	108	104	-	471
	Bac. Sains (Ekonomi Sumber)	95	61	66	53	-	275	89	60	63	51	-	263
	Bac. Perakaunan	83	76	58	45	-	262	83	53	53	39	-	248
	Diploma Perniagaantani	-	-	12	-	-	12	-	-	-	-	-	-
	Jumlah	300	281	248	202	-	1031	283	281	224	194	-	982
Kedokteran Veterinar dan Sains Peter- nakan	Doktor Perubatan Veterinar	45	39	30	16	18	148	39	37	30	16	17	139
	Diploma Kesihatan Haiwan dan Peternakan	89	55	52	39	-	235	88	51	56	-	-	195
	Jumlah	134	94	82	55	18	383	127	88	86	16	17	334
Kejuruteraan	Bac. Kejuruteraan (Pertanian)	37	24	22	26	-	109	37	17	21	23	-	98
	Bac. Kejuruteraan (Awam)	41	19	18	13	-	91	40	19	16	9	-	84
	Bac. Kejuruteraan (Elektronik/ Komputer)	49	43	34	22	-	148	50	42	31	22	-	145
	Bac. Kejuruteraan (Mekanikal/ Sistem)	52	39	36	20	-	147	47	35	36	17	-	135
	Bac. Kejuruteraan Pertanian	107	67	82	-	-	256	103	59	78	-	-	240
	Jumlah	286	192	192	81	-	751	277	172	182	71	-	702
Perhutanan	Bac. Sains Perhutanan	52	44	46	46	-	188	48	45	46	32	-	171
Sains Makanan dan Bioteknologi	Bac. Sains dan Teknologi Makanan	58	55	49	29	-	191	58	55	48	30	-	191
	Bac. Sains (Bioteknologi)	40	43	25	28	-	136	40	44	25	25	-	134
	Jumlah	98	98	74	57	-	327	98	99	73	55		

Pengajian Pendidikan	Bac. Pend. (Sains Pertanian) Bac. Pend. (Sains Rumah tangga) Bac. Pend. (Pendidikan Jasmani) Bac. Pend. (Peng. Bahasa M'ia sebagai Bahasa Pertama) Bac. Pend. (bimbingan dan Kounseling) Bac. Pend. (Peng. Bahasa Inggeris sebagai Bahasa Kedua)	42 29 60 159 61 100	38 32 53 165 54 116	32 26 53 152 45 76	35 20 52 153 59 121	- - - - - -	147 107 223 629 219 415	36 27 60 160 61 90	44 32 59 164 54 125	32 26 53 152 45 78	19 20 51 153 59 120	- - - - - -	131 105 223 629 219 413
	Jumlah	451	463	386	440	-	1740	434	478	386	422	-	1720
Pertanian	Bac. Sains Hortikultur Bac. Sains Pertanian Bac. Sains (Pembangunan Manusia) Diploma Pertanian Diploma Pembangunan Manusia	135 162 85 216 113	79 93 67 240 49	65 111 50 336 65	59 83 32 - -	- - - - -	338 459 234 792 227	129 135 79 210 110	79 112 70 237 50	64 109 50 320 65	54 85 27 - -	- - - - -	326 441 226 767 225
	Jumlah	711	528	627	184	-	2050	663	548	608	166	-	1985
Sains dan Pengajian Alam Sektar	Bac. Sains (Kepujian) Bac. Sains (Alam Sektar) Bac. Sains Komputer Diploma Sains Komputer	308 36 67 87	204 26 50 65	107 17 32 82	43 13 24 -	- - - -	662 92 173 234	284 31 59 87	207 23 52 56	108 15 27 53	40 14 23 -	- - - -	639 83 161 196
	Jumlah	498	345	238	80	-	161	461	338	203	77	-	1079
Perikanan dan Sains Samudera	Bac. Sains Perikanan Diploma Perikanan	56 116	42 65	26 63	23 -	- -	147 244	44 113	51 62	26 58	23 -	- -	
	Jumlah	172	107	89	23	-	391	157	113	84	23	-	377
	Matikulasi Sains Matikulasi (TESL)	532 52	530 51	- -	- -	- -	1062 103	515 51	524 51	- -	- -	- -	1039 102
	JUMLAH BESAR	3286	2733	1982	1168	18	9187	3114	2737	1892	1056	17	8816

JADUAL III
TABURAN PELAJAR MENGIKUT PROGRAM DAN
SEMESTER TAHUN AKADEMIK 1990-91 (KAMPUS BINTULU)

TAHUN	SEMESTER i				SEMESTER ii			
	i	ii	iii	j	i	ii	iii	j
PROGRAM								
Diploma Pertanian	247	57	127	431	235	63	124	422
Diploma Perhutanan	118	38	57	213	113	41	54	211
Diploma Perniagaantani	113	49	49	211	109	47	50	206
Pendahuluan	93	-	-	93	90	-	-	90
Jumlah	571	144	233	948	547	151	231	929

JADUAL IV
TABURAN PELAJAR-PELAJAR PENGAJIAN SISWAZAH MENGIKUT
FAKULTI DAN SEMESTER BAGI TAHUN AKADEMIK 1990-91

FAKULTI/PUSAT	SEMESTER i				SEMESTER ii			
	MBA	Master	Ph.D.	J	MBA	Master	Ph.D	J
Ekonomi dan Pengurusan	46	16	14	76	26	12	11	49
Kedokteran Veterinar dan Sains Peternakan	-	18	16	34	-	14	17	31
Kejuruteraan	-	14	4	18	-	14	5	19
Pengajian Pendidikan	-	73	6	79	-	67	9	76
Pertanian	-	37	19	56	-	33	17	50
Sains dan Pengajian Alam Sekitar	-	23	13	36	-	28	15	43

Perikanan dan Sains Samudera	-	13	7	20	-	10	8	18
Sains Makanan dan Bioteknologi	-	31	4	35	-	35	6	41
Pusat Pengembangan dan Pendidikan Lanjutan	-	54	23	77	-	53	24	77
Perhutanan	-	28	7	35	-	18	9	27
Jumlah	46	307	113	466	26	284	121	431

JADUAL V
TABURAN SISWAZAH MENGIKUT PROGRAM
DAN JANTINA BAGI TAHUN 1990-91

Program	Lelaki	Perempuan	Jumlah
Diploma Pertanian	241	126	367
Diploma Pembangunan Manusia	11	37	48
Diploma Perikanan	56	5	61
Diploma Kesihatan Haiwan dan Peternakan	27	7	34
Diploma Kejuruteraan Pertanian	50	18	68
Diploma Perhutanan	32	3	35
Diploma Perniagaantani	26	39	65
Diploma Sains Komputer	19	16	35
Jumlah Kecil	462	251	713
Bachelor Sains (Perniagaantani)	73	56	129

Bachelor Sains (Ekonomi Sumber)	26	27	53
Bachelor Perakaunan	11	24	35
Bachelor Sains Pertanian	50	14	64
Bachelor Sains (Pembangunan Manusia)	8	20	28
Bachelor Sains Hortikultur	8	6	14
Bachelor Sains dan Teknologi Makanan	12	7	19
Bachelor Sains (Bioteknologi)	3	13	16
Bachelor Sains (Perhutanan)	20	-	20
Doktor Perubatan Veterinar	10	11	21
Bachelor Kejuruteraan (Pertanian)	12	-	12
Bachelor Kejuruteraan (Awam)	19	1	20
Bachelor Kejuruteraan (Elek./Komputer)	26	1	27
Bachelor Kejuruteraan (Mekanikal/Sistem)	15	-	15
Bachelor Sains (Alam Sekitar)	6	6	12
Bachelor Sains (Kepujian)	21	15	36
Bachelor Sains dgn. Pendidikan (Kepujian)	5	39	44
Bachelor Pendidikan (Sains Pertanian)	13	6	19
Bachelor Pendidikan (Sains Rumahtangga)	-	19	19

Bachelor Pendidikan (Pendidikan Jasmani)	33	18	51
Bachelor Pendidikan (Bimbingan & Kaunseling)	32	13	45
Bachelor Sains (Perikanan)	7	4	11
Bachelor Pendidikan (Pengajaran Bahasa Malaysia Sebagai Bahasa Pertama)	91	31	122
Bachelor Pendidikan (Pengajaran Bahasa Inggeris Sebagai Bahasa Kedua)	30	49	79
Bachelor Sains Komputer	25	7	32
Jumlah Kechil	556	387	943
Master Pentadbiran Perniagaan	9	4	13
Master Sains Pertanian	4	1	5
Master Sains	6	8	14
Doktor Falsafah	6	-	6
Jumlah Kecil	26	13	38
JUMLAH BESAR	1043	651	1694

PERJAWATAN

Dalam tempoh laporan ini kedudukan jawatan di Universiti Pertanian Malaysia adalah sama seperti pada tahun lalu cuma terdapat dalam beberapa perubahan pada beberapa kategori jawatan hasil daripada kenaikan gred gaji dan tukarganti jawatan mengikut perkembangan dan keperluan Universiti. Pembahagian jawatan-jawatan di Universiti Pertanian Malaysia ialah 1251 jawatan kumpulan A, 151, Kumpulan B, 1010, kumpulan C dan 2012 lagi bagi kumpulan D yang menjadikan jumlah keseluruhannya 4424 jawatan.

Bagi tempoh antara bulan Jun 1990 hingga akhir bulan Mei 1991, Bahagian Perjawatan telah menguruskan 50 perlingtonan ke jawatan dalam kumpulan A, 3 bagi kumpulan B, 52 bagi kumpulan C dan 98 untuk kumpulan D. Perlingtonan tersebut adalah termasuk perlingtonan ke jawatan tetap, sementara dan sambilan mengikut keperluan Universiti dari masa ke semasa. Jumlah kesemua perlingtonan yang diuruskan bagi tempoh laporan ialah sebanyak 203 perlingtonan.

Walaupun tiada jawatan baru diluluskan oleh Kerajaan, pihak Universiti telah berjaya menampung kekurangan jawatan yang dialami itu dengan menggunakan jawatan-jawatan yang ada secara optima.

Tindakan telah diambil bagi mengatasi kekurangan tenaga pekerja iaitu dengan menggagihkan semula jawatan mengikut keperluan dan keutamaan semasa selaras dengan kehendak Kerajaan Malaysia yang menghadkan pengwujudan jawatan-jawatan baru di sektor awam.

Perletakan Jawatan/Persaraan

Dalam tempoh yang sama seramai 56 orang kakitangan Universiti ini telah meletakkan jawatan. Dari jumlah tersebut 18 daripadanya dari kumpulan A, 1 kumpulan B, 9 dari kumpulan C dan selebihnya seramai 28 lagi dari kumpulan D.

Sementara itu 13 orang telah bersara wajib, 8 orang bersara secara pilihan dan 3 orang lagi telah meninggal dunia.

Tatatertib

Dari 18 kes yang dikemukakan kepada Lembaga Tatatertib Universiti Pertanian Malaysia 13 orang telah dithabitkan dengan beberapa kesalahan dan 10 daripadanya telah dikenakan hukuman buang kerja dari perkhidmatan Universiti.

Kenaikan Pangkat

Dalam tempoh ini seramai 11 orang pegawai telah dinaikkan pangkat iaitu 5 antaranya dari kumpulan A, 2 kumpulan C dan 4 orang lagi dari kumpulan D.

Latihan

Kursus dan latihan adalah merupakan salah satu aspek penting dan berkesan dalam meninggikan mutu kerja serta memberikan dorongan dan kepuasan kepada pekerja untuk memajukan kerjayanya. Untuk itu Unit Latihan, Bahagian Perjawatan, Universiti Pertanian Malaysia sentiasa memberikan perhatian dan tindakan yang sewajarnya dalam urusan ini bagi membolehkan seramai 37 orang tenaga pengajar melanjutkan pelajaran ke peringkat Ph.D. dan 6 orang di peringkat Master.

Disamping itu pula seramai 27 orang tenaga pengajar telah menamatkan kursus Ph.D dan 2 lagi di peringkat Master dalam jangkamasa yang sama. Bagi memenuhi keperluan latihan selain daripada tenaga pengajar, Unit Latihan telah mengendalikan sebanyak 17 program kursus pendek dalam perkhidmatan iaitu 5 program bagi kumpulan A, 1 program bagi kumpulan A dan B, 3 program bagi gabungan kumpulan A, B, C dan D, 4 program khusus bagi kumpulan C dan 4 program lagi bagi kumpulan C dan D di mana 601 orang pegawai telah mengikuti program-program tersebut.

Selain daripada program yang dianjurkan sendiri oleh Unit Latihan, Bahagian Perjawatan terdapat juga pegawai-pegawai yang menjalani kursus-kursus pendek di luar negara di mana 18 orang pegawai dari berbagai kategori menjalani 8 program kursus tersebut. Bagi mengimbangi latihan dan kursus untuk setiap kategori pekerja yang tidak dapat dilaksanakan dalam kampus Universiti Pertanian Malaysia, seramai 88 orang pegawai telah menjalani beberapa kursus di Ins-titusi Latihan dan Negara, terutamanya bagi kursus-kursus kemahiran dan teknikal.

PENYELIDIKAN

Tahun 1990/91 merupakan tahun akhir Racangan Malaysia Kelima dan permulaan bagi Racangan Malaysia Keenam. Dengan melangkahnya ke satu rancangan yang baru pegawai-pegawai akademik di UPM ini semakin rancak menjalankan penyelidikan

Dalam tahun 1990 sebanyak 69 program jangka panjang dijalankan tetapi tahun 1991

menampakkan pertambahan program penyelidikan kepada 120 program. Oleh kerana program jangka panjang telah berlipat ganda, projek jangka pendek telah berkurangan daripada 280 projek dalam tahun 1990 kepada lebih 100 projek bagi tahun 1991.

Kejayaan penyelidikan sepanjang Rancangan Malaysia Kelima dapat dilihat daripada beberapa penemuan baru yang telah dihasilkan. Ini termasuk penemuan teknik-teknik diagnostik untuk mengesan beberapa jenis penyakit; pengasingan dan pengenalan komponen toksik dalam rumput *Brachiaria*; cara yang efektif dan spesifik untuk kajian kualiti pemakanan ternakan; pembinaan beberapa alat bagi meningkatkan hasil pertanian; pengenalan virus yang merosakkan tanaman; peningkatan hasil beberapa jenis tanaman; pembentukan model input-output untuk analisis impak dinamis bagi projek dan program pembangunan; pertama dalam pembentukan pengkalan data model perakaunan

aliran tunai dan perusahawan; pertama juga dalam pembentukan teknik perakaunan bagi penilaian sesuatu industri khusus (industri akuakultur) dan lain-lain.

BAHAGIAN HAL EHWAL PELAJAR

Bahagian Hal Ehwal Pelajar Mengandungi Unit-unit seperti berikut:

1. Perhubungan Pelajar
2. Kaunseling dan Kerjaya
3. Kesihatan
4. Perumahan
5. Agama dan Kerohanian
6. Sukan dan Rekreasi
7. Kebudayaan dan Kesenian

Unit Perhubungan Pelajar

Persatuan Fakulti/Kolej dan Kelab menjalankan kegiatan mereka setelah mendapat kelulusan daripada Bahagian Hal Ehwal Pelajar.

Senarai Persatuan Fakulti/Kolej dan Kelah

Jumlah Kegiatan Sesi 1990/91

1.	Majlis Perwakilan Pelajar	38
2.	Persatuan Mahasiswa Fakulti Perhutanan	11
3.	Persatuan Mahasiswa Fakulti Kedokteran Veterinar dan Sains Peternakan	7
4.	Persatuan Mahasiswa Fakulti Pertanian	18
5.	Persatuan Mahasiswa Fakulti Kejuruteraan	6
6.	Persatuan Mahasiswa Fakulti Ekonomi dan Pengurusan	10
7.	Persatuan Mahasiswa Fakulti Pengajian Pendidikan	5
8.	Persatuan Mahasiswa Fakulti Sains Makanan dan Bio-teknologi	3
9.	Persatuan Mahasiswa Pembangunan Manusia	5
10.	Persatuan Mahasiswa Fakulti Perikanan dan Sains Samudera	4
11.	Persatuan Mahasiswa Fakulti Sains dan Pengajian Alam Sekitar	9
12.	Kumpulan Latihan Kelanasiswa Malaysia	11
13.	Kelab Pandu Putri	5
14.	Persatuan Bulan Sabit Merah	14
15.	Kolej Kediaman Cikgu Rashid	3
16.	Kolej Kediaman Kedua	8
17.	Kolej Kediaman Ketiga	6
18.	Kolej Kediaman Keempat	5
19.	Kolej Kediaman Kelima	8
20.	Kolej Kediaman Keenam	7

21.	Kolej Kediaman Ketujuh	10
22.	Kolej Tun Perak	8
23.	Kolej Pendita Za'ba	5
24.	Pelajar Luar Kampus	3
25.	Kegiatan Kelab-kelab	52

JUMLAH KEGIATAN:

261
= = =

2. Laporan Seminar/Kursus/Forum/-Bengkel dan Lain Yang dianjurkan oleh Bahagian Hal Ehwal Pelajar.

(a) Bilangan yang dianjurkan bagi sesi 1990/91 25

3. Laporan Tatatertib

(a) Bilangan kes yang dibica-rakan bagi sesi 1990/91 33

4. Laporan Projek Lawatan Sambil Belajar

Ke Luar Negara sesi 1990/91 14

Unit Bantuan Kewangan

1. Maklumat ini adalah berdasarkan tarikh terakhir pada 28 Februari 1991. Sehingga ke tarikh tersebut menunjukkan seramai 8,805 orang pelajar atau 95.86% daripada jumlah pelajar 9,185 telah mendapat bantuan kewangan biasiswa/pinjaman termasuk bekas guru yang mendapat separuh gaji semasa menuntut di Universiti ini.

2. Seramai kira-kira 380 pelajar dari berbagai tahun masih tidak memperolehi sebarang pinjaman/biasiswa. Usaha membantu para pelajar berkenaan telahpun diajukan kepada pihak-pihak yang berkenaan.

3. Bagi sesi 1990/91 Tabung Pinjaman Pelajar terus memainkan peranan membantu para pelajar. Beberapa buah Negeri seperti Selangor, Sarawak, Kelantan, Pahang, Johor, Sabah dan Melaka telah mengwujudkan Tabung Pinjaman Negeri masing-masing di Universiti Pertanian Malaysia. Walaupun tabung ini memberi sejumlah pinjaman yang terhad tetapi ianya dapat meringankan beban yang dihadapi oleh pelajar.

4. Unit ini akan terus berusaha memperingkatkan lagi usaha untuk mencari Bantuan Kewangan pelajar bagi sesi akan datang.

Unit Bimbingan Agama dan Kerohanian

Unit Bimbingan Agama dan Kerohanian bertanggungjawab memberi khidmat nasihat dan bimbingan kepada para pelajar agar menjadi seorang Muslim yang berpegang teguh kepada agama dan mendaulatkan cara hidup Islam yang merangkumi segenap bidang kehidupan.

Dengan tujuan dan falsafah ini diharapkan agar kefahaman/penghayatan, motivasi dan kecemerlangan hidup beragama setiap individu pelajar sentiasa terjamin kukuh.

Bagi mencapai hasrat agar ajaran Islam dapat dimanifestasikan dalam cara hidup setiap individu pelajar, aktiviti yang berbentuk khidmat nasihat, bimbingan, perbincangan kumpulan, pengajian Fardhu Ain, kursus, bengkel, seminar dan ceramah umum dijalankan sepanjang sesi 1990/91.

Dalam usaha membina budaya ilmu dan meningkatkan keupayaan pelajar memahami ilmu, sebuah Pusat Sumber telah diwujudkan. Pusat Sumber ini menyediakan kemudahan khidmat rujukan seperti buku, majalah, jurnal, kertas kerja, bahan pandang dengar dan sebagainya.

Sambutan dari para pelajar untuk menggunakan khidmat ini amat menggalakan.

Dalam usaha penyebaran maklumat dan penerbitan, unit dari masa ke semasa mengedarkan risalah-risalah agama yang diperolehi dari Pusat Islam Malaysia dan Jabatan-jabat Agama. Unit juga menerbitkan buku-buku panduan dan risalah dan diedarkan kepada pelajar serta masyarakat kampus.

Bagi mendokong hasrat dan cita-cita untuk memberi bimbingan kepada para pelajar, kerjasama dan sokongan dari semua pihak sentiasa diperlukan. Syukur Alahamdulillah, usaha murni yang dirancang sepanjang sesi ini dapat dijayakan dengan sempurna.

Unit Kebudayaan dan Kesenian

Aktiviti yang diselenggarakan oleh Unit ini terbahagi kepada dua kategori iaitu latihan dan persembahan.

1. Latihan

A. Latihan terbahagi kepada dua kumpulan-kumpulan kesenian iaitu:

i. Pancaragam	1 kali seminggu
ii. Kompong	5 kali seminggu
iii. Caklempong	14 kali seminggu
iv. Tarian	2 kali seminggu
v. Drama	2 kali seminggu
vi. Seni Lukis	2 kali seminggu
vii. Seni Foto	2 kali seminggu
viii. Koir	1 kali seminggu

B. Setiap persatuan Seni Mempertahankan Diri menjalankan latihan 3 kali seminggu.

- Seni Gayung Malaysia
- Seni Silat Cekak Malaysia
- Seni Silat Lincah Malaysia
- Seni Silat Gayung Fatani
- Shito Ryu Karate Do
- Tae Kwan Do

2. Persembahan

Berikut adalah ringkasan jenis kegiatan kebudayaan yang telah dijalankan sepanjang sesi 1990/91.

C. Laporan kegiatan dan aktiviti Persatuan seni mempertahankan diri Universiti Pertanian Malaysia.

Terdapat 6 buah persatuan seni mempertahankan diri di kampus ini iaitu:

Persatuan	Aktiviti
a. Seni Silat Gayung Malaysia	7
b. Seni Silat Cekak	16
c. Seni Silat Lincah	5
d. Seni Silat Gayung Fatani	5
e. Shito Ryu Karate Do	9
f. Tae Kwon Do	11

53

D. Kumpulan Muzik di bawah kelolaan Unit Kebudayaan:

Persatuan	Aktiviti
i. Brass Band	4
ii. Caklempong	15
iii. Kompong	10
iv. Muzik Asli	-
v. Koir	2

31

E. Kumpulan Tarian Mahasiswa/Siswi UPM (PERMATA)

- Jumlah Aktiviti 2

F. Permainan Tradisional - Gasing Pangkah

- Jumlah aktiviti 1

G. Drama	Aktiviti
Grup Teater UPM	4
H. Seni Lukis	2
I. Seni Foto	3

9

Jumlah keseluruhan aktiviti sepanjang sesi 1990/91 = 106 aktiviti

UNIT PERUMAHAN PELAJAR

1. Bilangan pelajar yang tinggal di Kolej-kolej Kediaman Sesi 1990-91.

Kolej	Bilangan Pelajar J u l a i 1990/91	Sistem Makanan
Kolej Cikgu Rashid	550	Bekalan Makanan Kontrak
Kolej Kediaman Kedua	677	Tradisional
Kolej Kediaman Ketiga	672	Tradisional
Kolej Kediaman Keempat	658	Tradisional
Kolej Kediaman Kelima	658	Kafeteria
Kolej Kediaman Keenam	677	Tradisional
Kolej Kediaman Ketujuh	666	Tradisional
Kolej Tun Perak	710	Kafeteria
Kolej Pendita Za'aba	770	Bekalan Makanan Kontrak
Kuala Terengganu	150	Kafeteria
	6188	

2. Bilangan pelajar yang mendaftar tinggal di luar kampus.

Semester	Bilangan Pelajar
Julai 1990/91	2,829 orang

Unit Kaunseling dan Kerjaya

Kegiatan profesional, pengembangan dengan pelajar di dalam kampus (23 aktiviti).

Seminar Kaunseling dan Kemanusiaan Ke 2 pada 15-16.12.90. Fokus: Kasih dan Sayang(1).

Bengkel untuk pelajar (6)

1. Bengkel Meyelesaikan Masalah Untuk PRS
2. Bengkel Motivasi Diri
3. Bengkel Panduan Temuduga
4. Bengkel Brainstorming
5. Bengkel Panduan Menulis Resume
6. Bengkel Etiket Sosial

Program Pembangunan Usaha Siswa (PPUS)(1).

Kursus Motivasi dan Keusahawanan (Teori pada 25/5/90 - 1/6/90)

Latihan Praktik Sangkut Kerja pada 26.11.90-8.12.90

Ceramah di agensi luar dan di sekolah-sekolah (10)

Taklimat kepada sekolah-sekolah dan pegawai-pegawai institusi luar yang melawat Universiti Pertanian Malaysia(9)

Menghadiri seminar/bengkel di dalam dan di luar kampus (23)

Melibatkan diri dengan pameran di sekolah dan institusi luar (3)

Siri Penerbitan (1)

- a. Panduan Menulis Resume Edisi Kedua
- b. Panduan Kerjaya Edisi Ke 6
- c. Jalanbicara (proceeding) Seminar Kaunseling dan Kemanusiaan I

Sesi temuduga kerjaya dikendalikan bersama dengan bakal majikan (15).

Bakal majikan yang menggunakan khidmat unit untuk mendapatkan senarai graduan bagi tujuan temuduga dan kerjaya penempatan (73).

Ceramah Kerjaya Niaga - usahasama dengan Pusat Pemasaran Motivasi(1).

Kursus Pembimbing Rakan Sebaya (1).

Taklimat Ujian On-Line di Pusat Komputer kepada kaunselor-kaunselor universiti tempatan/institusi pengajian tinggi (1).

Majlis Pelancaran Kelab Usahawan UPM (1).

Minggu Kerjaya UPM pada 5 - 7.3.91(1).

Sesi kaunseling dengan pelajar (klien)(230).

Unit ini juga telah menjalankan Penyelidikan Perkembangan Kerjaya Lulusan UPM tahun 1990/91. Sehingga kini projek tersebut telah sampai ke peringkat penulisan laporan penyelidikan.

* () jumlah aktiviti.

Unit Sukan

Unit Sukan menyediakan rancangan tetap (Kalendar Aktiviti) sepanjang sesi tahun pengajian di samping mengadakan kegiatan yang bercorak pertandingan serta sukan cemerlang dengan memberi perhatian pada kalendar

akademik pada sesuatu sesi serta diselaraskan dengan Kalendar Aktiviti Majlis Sukan Universiti Malaysia (MASUM).

Berikut adalah ringkasan kegiatan Sukan Pelajar yang dijalankan sepanjang sesi 1990/91.

1. Jun/Julai 1990

1.1 Mengadakan aktiviti sukan Minggu Suaikenal untuk para pelajar baru pada 25 Jun hingga 30 Jun 1990 dengan diikuti pula aktiviti Sukan Pelajar Baru mengadakan perlawanan dengan Pelajar Lama (Seniors) dalam beberapa jenis permainan yang dianjurkan oleh Jawatankuasa Sukan peringkat Kolej-kolej Kediaman dan Fakulti.

1.2 Jawatankuasa Kecil permainan peringkat Universiti mengadakan pemilihan dan latihan ke arah pembentukan pasukan Universiti. Latihan/persediaan Olahraga telah diadakan pada 1 hingga 17 Julai 1990. Di antara para atlit UPM yang terpilih ke SUKMA ke III di Kuching, Sarawak telah menghadiri latihan pusat di UTM, Sekudai, Johor bermula 10 Julai hingga 17 Julai 1990.

1.3 Aktiviti Merentas Kampus Antara Kolej telah diadakan pada 25 Julai 1990. Manakala Pesta Sukan Konvo Peringkat I merangkumi permainan Bolasepak, Bola Jaring, Bola Tampar (W), Sepak Takraw dan Tennis telah diadakan pada 28 Julai dan 29 Julai 1990.

2. Ogos, September dan Oktober 1990

Beberapa Pertandingan Tertutup dan Terbuka telah dianjurkan pada jangkamasa tersebut ke arah memantapkan pasukan-pasukan Universiti di samping mendedahkan ahli-ahli Jawatankuasa Kecil permainan-permainan berkenaan dalam bidang pengelolaan. Berikut adalah aktiviti-aktiviti sukan yang telah dijalankan di sepanjang bulan tersebut:

- 1 Ogos - Saringan Olahraga
- 1 & 5 Ogos - Pesta Sukan Konvo Peringkat II (Ragbi, Hoki,

Bola Tampar (L), Ping Pong dan Catur)

8 Ogos - Saringan dan Separuh Akhir Olahraga

11 Ogos - Temasya Olahraga UPM Ke 10 Sesi 1990/91

19 Ogos - Sukan ALUMNI (Golf)

1&2 September - Kejohanan Trek & Padang serta Kejohanan Renang Pelajar Antara Universiti/ITM Malaysia 1990/91 di Studium Cheras dan UTM.

14-21 September - Sukan MASUM II di Universiti Kebangsaan Malaysia, Bangi.

2.1 Keputusan Kejohanan Trek & Padang

Kontigen UPM telah muncul sebagai Juara Keseluruhan pada Kejohanan Trek dan Padang MASUM Ke 7 yang berlangsung di Stadium Cheras pada 1 dan 2 September 1990.

2.2 Keputusan Sukan MASUM I

Temasya Sukan MASUM (Antara Universiti/IPT Malaysia) Peringkat Pertama di UTM, Sekudai pada 16 - 19 September 1990. Kontigen UPM berjaya menjadi JOHAN dalam empat (4) jenis sukan dan memperolehi dua (2) Naib Johan daripada sebelas (11) jenis sukan yang dipertandingkan.

2.3 Keputusan Sukan MASUM II

Dalam Temasya Sukan MASUM Peringkat Kedua di Universiti

Kebangsaan Malaysia, Bangi pada 30 Januari 1991 hingga 2 Februari 1991. Kontigen UPM berjaya menjadi Johan dalam tujuh (7) acara dan memperolehi Naib Johan dalam dua (2) acara daripada dua belas (12) jenis sukan yang dipertandingkan.

3. November, Disember 1990 Hingga Mac 1991

3.1 Sukan Universiti ASEAN telah berlangsung di Bandung, Indonesia dari 10 hingga 18 November 1990 di mana beberapa atlit UPM turut mengambil bahagian dalam sukan tersebut.

3.2 Sukan Antara Kolej Kediaman telah berlangsung mulai dari awal bulan Disember 1990 dan tamat pada awal bulan Februari 1991. Sebanyak 23 acara permainan dipertandingkan di mana acara-acara tersebut dijalankan secara berperingkat-peringkat (MODUL).

3.3 Pasukan Tae Kwon Do UPM telah muncul sekali lagi sebagai Johan buat kali yang keempat dalam Kejohanan Tae Kwon Do MASUM yang berlangsung pada 28 Januari hingga 2 Februari 1991 di Universiti Kebangsaan Malaysia, Bangi.

3.4 Pasukan Bolasepak dan Bola Jaring UPM telah menjuarai kedua-dua permainan tersebut dalam Kejohanan Liga MASUM yang telah berlangsung pada 2 Februari 1991 di Kampus Universiti Kebangsaan, Bangi.

4. Anugerah

UPM telah mengadakan Majlis Anugerah Lencana Sukan 1990/91 kali ke XI pada hari Khamis 14 Mac 1991 jam 8.00 malam bertempat di Dewan Besar, UPM. Tujuh (7) orang atlit UPM telah dianugerahkan Lencana Biru Universiti - Lencana Tertinggi manakala anugerah **Olahragawan** disandang oleh Sardara Mohd. Safuan b. Hj. Mohd. Taib serta anugerah **Olahragawati** disandang oleh Saudari Chung Pit Jin. Peranugerahan tersebut telah disampaikan oleh pihak Universiti kepada ahli-ahli sukan yang aktif dan mempunyai pencapaian yang mengagumkan.

Pusat Kesihatan Pelajar

Pusat Kesihatan Pelajar menerima sejumlah 35,233 kedatangan pesakit untuk tahun 1990 (30,433 kedatangan di Klinik Perubatan dan 4,800 di Klinik pergigian). Lima mobiditi utama kedatangan pesakit di Klinik Perubatan ialah penyakit pernafasan, penyakit kulit, kecederaan, penyakit urat saraf dan penyakit pemakanan. Di Klinik Pergigian 5 sebab utama kedatangan ialah tampalan kekal, tampalan sementara, scaling dan polishing, cabut gigi dewasa dan cabutan gigi susu.

Seramai 423 orang pesakit telah dirujuk ke Hospital Daerah/Hospital Universiti dan 95 daripadanya telah dimasukkan ke dalam wad. Di wad Pusat Kesihatan Pelajar UPM seramai 78 orang telah dimasukkan disebabkan oleh penyakit berjangkit. Sebanyak 176 pembedahan kecil dan 2,174 cucian luka dilakukan. Ujian penyakit yang telah dibuat ialah 1626 ujian darah dan air kencing, 524 x-ray dan 45 ujian electrocardiogram 2,218 orang mendapat suntukan pelalian dan 447 orang mendapat rawatan fisioterapi.

Lain-lain Perkhidmatan

Kakitangan Pusat Kesihatan Pelajar terlibat di dalam 25 aktiviti yang memerlukan 'standby' Pertolongan Cemas kegiatan, 150 jam dalam ceramah pendidikan kesihatan, 18 kali pemeriksaan asrama dan kantin dan 4 kali sambilan nyamuk di seluruh kawasan kampus.

PEMBANGUNAN

Projek yang telah siap:

Serdang

1. Bangunan tambahan Fakulti Sains Makanan dan Bioteknologi.
2. Bangunan Fakulti Pengajian Pendidikan.
3. Bangunan Matematik dan Sains Komputer.
4. Bangunan Sains Daging Fakulti Kedokteran Veterinar dan Sains Peternakan.
5. Bangunan Setor Jualan Ladang.

Port Dickson

6. Komplek Pusat Oseanografi dan

marikultur Fakulti Sains Perikanan dan Sains Samudera.

Projek-projek yang sedang dilaksanakan:

Serdang

1. Projek Kolam Renang.
2. Trek sintetik 400 meter.
3. Gelanggang Tennis (8 unit)
4. Pavalion dan Bilik Persalinan
5. Markas Tambahan PALAPES
6. Dewan Makan Tambahan P.P.P.L.
7. Unit Studio Landskap
8. Kolej Kediaman Pelajar ke 10
9. Bangunan Teknologi Biji Benih dan Perladangan Fakulti Pertanian

FAKULTI PERTANIAN

DEKAN

Prof. Mohd. Zain Karim (hingga 7 Mac 1991)

Dr. Wan Sulaiman Wan Harun

KAKITANGAN

Jumlah Kakitangan

Jabatan	Katetegori A	Kategori B	Kategori C	Kategori D
Pejabat Dekan	2	-	7	7
Agronomi dan Hortikultur	34	1	29	6
Pengajian Pembangunan Manusia	27	2	25	7
Perlindungan Tumbuhan	20	2	22	10
Sains Tanah	21	3	30	23
Jumlah	104	8	113	53
Jumlah Besar				278

PERLANTIKAN BARU

Seramai seorang Pensyarah, seorang Tuteur, 3 orang Jurutaip dan 2 orang Pembantu Am Rendah telah dilantik.

PERLETAKAN JAWATAN, PERSARAAN DAN TAMAT KONTRAK

Seramai 4 orang Pensyarah telah meletakan jawatan, 3 orang telah bersara dan seorang telah tamat tempoh kontrak.

CUTI BELAJAR

Seramai 21 orang Pensyarah sedang mengikuti program Ph.D. di dalam dan luar negara.

PERKARA AKADEMIK

Ijazah Lanjutan

Seramai 50 orang pelajar sedang mengikuti Ijazah Lanjutan di Fakulti ini iaitu 17 orang Ph.D. dan 33 orang M. Agric. Sc.

PENYELIDIKAN

1. Prof. Madya Dr. Sharifuddin Hj. abd. Hamid: Potensi Tanaman Eksotika dan Tanaman Rendahguna sebagai Tanaman Komersial (2).
2. Prof. Madya Khalip Abdul Raffar: Pengeluaran Tanaman Menerusi Beberapa Sistem Tanpa Tanah (4)
3. Prof. Madya Dr. Mohammad Md. Ali: Kawalan Bersepadu Penyakit-penyakit Capsicum spp. (6).
4. Prof. Yap Thoo Chai: Pembaikan Tanaman: Jagung-Keledek (8).
5. Dr. Azizah Hashim: Kawalan Perosak Tanaman yang berkesan untuk Pengeluaran Hasil Koko yang Bermutu (3).
6. Prof. Madya Dr. Mohd. Yusof Hussein: Agroecosystem Management of Plantation Crops (3).

7. Prof. Dr. Mohd. Zain Abd. Karim: Kajian Pembaikan Pengeluaran dan amalan Lepas Tuai pada berbagai Jenis Buah-buahan Tropika (13).

8. Prof. Madya Dr. Cheah Chooi Hwa: Pengeluaran Varieti-varieti Kacang Tanah (*Arachis hypogaea*) Berhasil Tinggi dengan Keperluan Input Minimum (3).

9. Dr. Syed Mohamed Zain S. Hasan: Genetik Solanum Melongena L. Kompleks (3).

10. Prof. Madya Dr. Sharifuddin Abd. Hamid: Sifat, Pencirian dan Pengurusan Tanah Asid Terluluhawa Pesat (Ultisol dan Ok-sisol)(4).

11. Prof. Madya Dr. Wan Sulaiman Wan Harun: Pemuliharaan Tanah dan Air pada Tanah Guram (3).

12. Prof. Madya Dr. Shamsuddin Jusop: Kajian Pedologi dan Kimia Tanah Organik dan Asid Sulfat di Malaysia (4).

13. Prof. Madya Dr. Zulkifli Hj. Shamsuddin: Pembaikan keadaan Fizik dan Biologi Tanah Berpasir untuk meningkatkan Hasil Tanaman (3).

14. Prof. Madya Dr. Zulkifli Hj. Shamsuddin: Peningkatan Nitrogen Biologi- Sumbangan Rhizobium dalam Tumbersaran Kekacang Bersimbiosis (4).

15. Dr. Makhdzir Mardan: Penyelidikan dan Pembangunan dalam Perlebahan (10).

16. Dr. Surjit Singh: 'Simulation Modelling', Kajian Nutrien dan Perosak bagi Sistem Penanaman Berasaskan Padi (3).

17. Prof. Madya Dr. Mohd. Yusof Hussein: Integrated Pest Management under Small Farm Agroecosystem (3).

18. Norazam Shuib: Kajian Perancangan Ekologi Landskap (1).

19. Dr. Saleh Kadzimin: Kajian Genetik dan Fisiologi sehubungan dengan Pembiakan dan Tabii Pembungaan Tanaman Hiasan Terpilih (2).

20. Prof. Madya Dr. Abd. Razak: Development of Underutilized Agro-based Fibers (2).

21. Dr. Jariah Masud: Pembangunan Keluarga dan Penggunaan Sumber (2).

PENERBITAN

1. Aziz, M.A., Chand, P.K., Power, J.B. dan Davey, M.R. (1990). "Somatic Hybrids Between the Forage Legumes *Lotus corniculatus* L. and *L. tenuis* Waldst et Kit". *J. Exp. Bot.* 41(225), 471-479.

2. Aziz, M.A., Chand, P.K., Power, J.B. dan Davey, M.R. (1990). "Transformation of *Lotus* Species Using an Ri Plasmid Vector", kertas kerja di **International Workshop on biotechnology and Crop Improvement in Asia**, 3-7 Disember 1990, ICRISAT, India. p.7.

3. Ahmad Tajudin J. dan Mohd. Razi I. 1990. "Growth and Yield of NFT-grown as Influenced by Different Solution Concentration", kertas kerja di **International Hydroponic Seminar of Hydroponic Culture of High Value Crops in Tropics**, 25-27 November 1990, UPM. (Vol. II).

4. Abdullah Al-Hadi Hj. Muhamed and M.T. Mohd. Nasir (1991). "Self-Esteem and Initial Drug Use: A Comparative Study between Users and Non-Users Among Malay Adolescents in Peninsular Malaysia", **PERTANIKA**, 14(1) 1-7.

5. Abdullah Al-Hadi Hj. Muhamed, Mohd. Nasir Mohd Taib, Ahmad Hariza Hashim dan Noor Azmawati Yusuf (1990). "Relationship between Selected Maternal Factors and Childrearing Practices", **Malaysian Journal of Family Studies**, 2, p.1-13.

6. Abdullah Al-Hadi Hj. Muhamed, Husna Sulaiman, Siti Nor Yaacob dan Muthamilarasy Sinnan (1990). "Secondary Abuse among Wives: Selected Resources and Cohabitation Period", **Malaysian journal of Family Studies**, 2, p. 46-56.

7. Abdullah Al-Hadi Hj. Muhamed and Mohd. Nasir Mohd. Taib (Reviewed and accepted for publication, Vol. 38, 1990/91 issue). "Social Factors Associated with the Development of Initial Drug Use Behaviour among Adolescents; A Comparative Study between Users and Non-Users, **Jurnal Akademia**, 23 pp.

8. Abdullah, C.T., Y.M. Khanif dan A.M. Mokhtaruddin (1991). "Nutrient Leaching in a Bris Soil Amended with Palm Oil Mill Cake". Soil Science Conference of Malaysia 1991. MSSS, Genting Highland.

9. Abdullah Al-Hadi Hj. Muhamed, Ariffin Nopiah dan Mohd. Nasir Mohd. Taib. (Reviewed and accepted for publication, Bil. 6 Menggunakan Dadah: Program-program Pencegahan Awalan Penggunaan Dadah di Peringkat Sekolah", **Jurnal Pendidikan Guru**, 27 pp.

10. Abdullah Al-Hadi Hj. Muhamed, Mohd. Nasir Mohd. Taib dan Ahmad Hariza Hashim (1991). "Mencegah Remaja daripada Menggunakan Dadah: Program-program Pencegahan Awalan Penggunaan Dadah di Peringkat Masyarakat", **Jurnal Kebajikan Masyarakat**, 12(12), p. 6-14.

11. Abdullah, N., Hamzah, A., Ramli, J., Mardan, M. (1990). Identification of Nasanov

Pheromones and the Effects of Synthetics
Pheromones on the Clustering Activity of the
Asiatic Honeybee (*Apis cerana*) Pertanika (accepted).

12. Azizah Chulan H. (1990). Effect of Fertilizer and Encomycorrhizal Inoculum on Growth and Nutrient Uptake of Cocoa (*Theobroma cacao* L.) Seedlings. Biology and Fertility of Soils (In press).

13. Aminuddin, H. dan A.S. Kamal (1990). Evaluation of Soil S Extractants and their Relationships with S Uptake by Oil Palm. Proceedings Seminar and 10th. meeting on standardization of soil, plant and fertilizer analysis in Malaysia and their interpretation. Kuching, 1990.

14. Aminuddin, H., T.Y. Ku Arif and G.J. Blair (1990). Efficiency of S Fertilizer as Affected by Methods Rates and Timing of Application on Rice with the use of S-35 isotope. Proceeding Persidangan Teknologi Nuklear, U.K.M. Bangi.

15. Aziz H. Chulan, T.G. Shaji and Z.A. Christine. (1990). Interactions of Mycorrhizal Fungi with Root Pathogen of Cocoa. In Current Trends in Mycorrhizal Research (Bushan L Jalali and Chand, H (eds.) pp. 78-79.

16. Chin H.F. (1990). "Storage of Recalcitrant Seeds: Past Present and Future". In **Tropical Tree Seed Research** ed J.W. Turnbull. No. 28, 89-92.

17. Chin H.F. (1990). "Hibiscus Garden - Towards Germplasm Conservation" kertas kerja di **International Conference and Exhibition on Orchids**, 22-28 Ogos, 1990, Kuala Lumpur. (In press).

18. Cheah, C.H. dan Mohd. Rafii Hj. Yusof. "The Evaluation Genetic Potential of the Mutant Matjan Gamma 20. **Proc. International Symposium on the Contribution of Plant Mutation Breeding to Improvement**", 18-22 Jun 1990, Vienna, Austria. (In press).

19. Cheah, C.H., Tan, N.H. dan Khor, H.T. "Oil and Protein Compositions of A Groundnut (*Arachis hypogae* L.) Mutant Matjan Gamma 20. **Proc. Malaysian Biochem. Soc. Conf. 15** 188-191 (1990).

20. Chand, P.K. dan Aziz, M.A. (1990). "Cell Suspension Protoplasts of the Wood Medicinal Species *Solanum dulcamara* L. Are Totipotent", kertas kerja di **Proc. 77th. Indian Sci. Cong.**, 4-9 Februari 1990, Cochin, India. p. 125.

21. Chan, H.Y. dan K.T. Joseph, (1990). Productivity of Hevea on Some Sedimentary Rock Derived Soils: A Specific Case Study. National Sem. on Land Evaluation for Agric. Development, Kuala Lumpur, Aug. 1990.

22. Dzolkifli Omar dan G.A. Matthieu (1991). Influence of Formulation and Spray Droplet Size upon the Persistence of Permethrin Deposits on Brussels Sprouts Leaves. **Crop Protection** Vol. 10. February 1991. p 41-44.

23. Dzolkifli Omar dan G.A. Matthieu (1990). The Rainfastness of Permethrin Deposits of Emulsifiable Concentrate (EC) and Ultralow-volume (ULV) Formulation of Brussels Sprout Leaves. **Tropical Pest Management**, 1990, 36 (2) 159-161.

24. Dzolkifli Omar, Loke W.H., Yusof, M.R. Sivapragasam P. (1990). Exploring Novel Techniques for Diamondback Moth Management. **Pengurusan Plutella di Malaysia: Perspektif dan Strategi**, Kuala Lumpur, 1990.

25. Edwards, D.G., H.A.H., Sharifuddin, M.N., Mohd. Yusof, J. Shamsuddin dan M. Norhayati. (1991). The Management of Soil Acidity for Sustained Crop Production. **Proc. Int. sump. Plant - Soil Interaction at Low pH**, Beckley, USA. (In press).

26. Faridah, A., T.K. Lim dan R.B. Mohamad. (1990). "A Comparative Electrophoretic Study of Some *Ganoderma* Species Collected from Coconut Trees (*Cocos nucifera*) and Diseased Oil-Palms (*Elaeis Guineensis*)", kertas kerja di **3rd International Conf. on Plant Protection in the Tropics**. 20-23 Mac 1990, Genting Highlands.

27. Fauziah, I., Dzolkifli O. and Wright, D.J. (1990). Studies on Resistance to Acylorea Compounds in *Plutella xylostella* L. (Lepidoptera: Yponomeutidae). Second Int. Workshop on the Management of Diamond Moth and other Crucifer Pest, Shanhua, Taiwan, 10-14 Disember 1990.

28. Gareth Jones, d. dan Halimi b. Mohd. Saud. (1990). Variation in ETs of Natural *Rhizobium* Populations Isolated from Soils of Different pHs. Paper Presented at "Agriculture in the 90's Symposium", Aberystwyth, Wales. January 1990.

29. Geok Lin Khor (1990). Fertility Preferences Among Malaysian Women: Analysis of Responses to the New Population Policy. **J. of Biosocial Science** 22: 465-476.

30. Geok Lin Khor, Tee E Siong dan Mirnalini Kandiah (1990). Patterns of Food Production and Consumption in the ASEAN Region. **World Review of Nutrition & Dietetics** 61: 1-40.

31. Halimah Hj. Ahmad dan Lau Yew Chin (1990). "Concepts of Home and Housing Satisfaction Perceived by Housewives Living in Low Cost Housing", **Malaysia Journal of Family Studies**. No. 2, p. 35-45.

32. Husna Sulaiman dan Christina Lam (1990). "Family Care and Interaction Time of Professional Mothers". *Malaysian Journal of Family Studies*. No, p. 14-24.
33. Halimi b. Mohd. Saud dan D. Gareth Jones. (1990). Effectiveness of Different Electrophoretic Types of *Rhizobium leguminosarum* bv. *trifolii*. Abstract book 5th. International Symposium on Molecular Genetics of Plant-Microbe Interactions, Inter-laken, Switzerland. 1990. pp.234.
34. Hashim, A.B. dan H. Aminuddin. (1991). Sulfur Balance for Rice Grown under Flooded Conditions. Proc. Soil Science Conference of Malaysia 1990. Malacca (In press).
35. Hashim, A.B. dan H. Aminuddin. (1990). The Influence of N and S Application on their Utilization by Rice Crop. Proceedings Seminar and 10th. Meeting Standardisation of Soil, Plant and Fertiliser Analysis in Malaysia and their Interpretation, Kuching, 1990.
36. Halim, R.A., D.R., Buxton, M.J. Hattendorf dan R.E. Carlson. (1990). "Crop Water Stress Index and Forage Quality Relationships in Alfalfa", *Agron. J.* 82: 906-909.
37. Hor, Y.L., P.C. Stanwood dan H.F. Chin. (1990). "Effects of Dehydration on Freezing Characteristics and Survival in Liquid Nitrogen of Three Recalcitrant Seeds". *Pertanika*. 13(3): (In press).
38. Hassan, B.M. (1990). "Clonal Rootstocks for Durian (*Durio zibethinus* Murr)". *Jap. J. Trop. Agric.* Vol. 34 No. 3: 197-200.
39. Hassan, B.M. (1990). "Vegetative Propagation Studies in Mangosteen (*Garcinia mangostana*)". *Jap. J. Trop. Agric.* Vol. 34 No. 2: 78-83.
40. Hassan, B.M. (1990). "Rooting of Mangosteen Cuttings: Effects of Basal Wounding and IBA", kertas kerja di **International Horticultural Congress**, 27 Ogos - 2 September 1990, Firenze, Italy.
41. Hassein, M.Y. dan N.H. Lajis (1990). Biological and Chemical Factors Associated with the Successful Introduction of *Elaeidobius kamerunicus*, the Oil Palm Pollinator in Malaysia. 6th. Int. Symp. on Pollination in Malaysia, Tilburg, Holland, 27-31 Ogos, 1990.
42. Hussein, M.Y. dan A.S. Norani (1990). An Alternative to Chemical Method of Controlling Vegetable Pest. Int. Conf. Hort., UPM. Serdang 7-9 Ogos 1990.
43. Ibrahim, A.G. (1990). Effect of Foliar application of Insecticide on Cocoa Midges and Pests. *Pertanika* 13(3): 361-366.
44. Ibrahim, A.G. dan Ruzlan W., (1990). Suitability of Selected Bananas to *Dacus dorsalis* Complex, Mal. App. Biol. 19(1): 87-91.
45. Ibrahim, A.G. (1990). Bionomics of Insect Pest Ciku in Malaysia, 23rd. Int. Hort. Congress, Florence, Italy, 27 Ogos - 1 Sept. 1990.
46. Joseph, K.T. dan H.Y. Chan, (1990). Workshop on Recent Developments in Soil Genesis and Classification, Kuala Lumpur, pp. 37-42.
47. Joseph, K.T. (1991). Residual Phosphate in Acid Soils: As Exemplified in an Iron Oxide Rich, Kaolinitic Clay Loam. Proc. Soil Science Conf. of Malaysia 1990, Malacca. (In press).
48. Joseph, K.T. (1990). Sustainable Agriculture in the Humid Tropics: The Case of Malaysia. Int. Symposium on Natural Resources Management for a Sustained Agriculture. New Delhi Feb. 1990.
49. Joseph, K.T. (1990). Land Evaluation for Agricultural, Development in Malaysia. Concepts and Approaches. National Sem. on Land Evaluation for Agric. Development. Kuala Lumpur, Ogos 1990.
50. Khor Geok Lin (1991). Dietary Patterns of Malaysia: Nutritional and Health Implications. *ASEAN Food journal* 6: 52-57.
51. Koeniger, G., Mardan, M., Ruttner, F. (1990). Male Reproductive Organs of *Apis dorsata*. *Apidologie* 21(1) 1-4.
52. Kevan, P.G. and Mardan, M. (1990). Yellow Rain. Natural History (Special issue)(In press).
53. Lau, C.H., A.R. Zaharah dan A. Abdul Rashid. (1990). Phosphate Chemistry and Availability in Malaysian Soils. Paper Presented in Workshop as Phosphate Sources for Acid Soil Sin the Humid Tropics of Asia, 6-7 November 1990, Kuala Lumpur.
54. Lee, C.C., dan T.E. Bilderback (1990). "Propagation of *Heptacodium jasminoides* by Softwood and Semi-hardwood Cuttings". *J. Environ. Hort* 8: 121-123.
55. Lee, C.C., T.E. Bilderback dan J.F. Thomas (1990). "Effect of Photoperiod and Day/Night Temperature on the Growth of *Heptacodium jasminoides*". (Accepted for publication). *Amer. Journal for Horticulture Science*.
56. Lester, R.N. dan Sayed M.Z. Hasan (1990). "The Distinction between *Solanum Incanum* and *Solanum Insanum* (Solanaceae)". *TAXON* 39(3), 521-523.
57. Mohd. Idris Z.A. (1990). **Cultivation of Tropical Fruits**. Hitech Enterprise, Kuala Lumpur. p. 104.

58. Mohd. Idris Z.A. (1990). "Hydroponics for the Rural Community", kertas kerja di **International Seminar on Hydroponic Culture of High Value Crops in the Tropics**, 25-27 November 1990, Serdang.
59. Muhamad Awang dan Ridzwan A. Halim (1990). "Effect of Carbon Dioxide Enrichment on Tobacco". **Transactions of the Malaysian Society of Plant Physiology**. Vol. 1, 1990. pp. 7-98. In Hamid Lazan et. al., (eds.)
60. Mohd. Razi Ismail dan R.M. Raja Harun (1990). "Carbon Dioxide Enrichment in the Glasshouse in Malaysia", kertas kerja di **International Horticultural Conference**, 7-9 Ogos 1990, UPM.
61. Mohamad, R.B., J.H. Arshad dan I.A. Rahman (1990). "Movement, Breakdown and Persistence of Carbofuran in Rice Microcosm", **J. Plt. Protec. in the Tropics**. 7: 27-37.
62. Mohamad, R.B. (1990). "In Vitro Inhibition of Acetylcholinesterase by Acephate and Methami Dophos", **J. Plt. Protec. in the Tropics**. 7: 55-61.
63. Mohamad, R.B. dan C.H. Goh (1990). "The Activity of Glyphosate, Glufosinate-ammonium and Imazapyr on *Imperata cylindrica* (L.) Raeuschel. **Biotrop Special Publ.** Nos. 38: 149-155.
64. Mohamad, R.B. (1990). "Weeds and Weed Management in Malaysian Agriculture". **Biotrop Special Publ.** No.: 38: 41-52.
65. Mohamad, R.B. dan K.A. Raffar (1990). "Education and Research in Land utilization and Application of Agrochemicals in Malaysian Agriculture", kertas kerja di **Tsukuba Asian Seminar on Agric. Education (TASAE)**, 14-27 Oktober 1990, Tsukuba, Jepun.
66. Mohd. Razi dan Burrage S.W. (1990). "Effects of Alternating Vapour Pressure Deficit on Growth and Physiological Processes of NFT-grown Tomatoes". **Mal. App. Bio. Journal** 19(2): to be published.
67. Mohd. Razi dan Burrage S.W. (1990). "NaCl - Salinities on Growth and Physiological Processes of NFT-grown Tomatoes", **Trans. Malaysian Society. Plant Physiology**: 105-108.
68. Mohd. Razi dan Burrage S.W. (1990). "Effects of Salinity, VPD and Root Temperature on Growth and Yield of Tomatoes", kertas kerja di **International Horticultural Conference**, 7-8 Ogos 1990, UPM.
69. Mohd. Razi dan R. Muhammad (1990). "CO₂ Enrichment in Glasshouse in the Tropics", kertas kerja di **International Horticultural Conference**. 7-8 Ogos 1990, UPM.
70. Mohd. Razi (1990). "Fruit Physiological Disorders of NFT-grown Tomatoes as Influenced by Salinity, VPD and Root Temperature", kertas kerja di **FFTC/UPM 1990 International Hydroponic seminar of Hydroponic Culture of High Value Crops in Tropics**. 25-27 November 1990, UPM. (Vol. II).
71. Mohd. Razi, M. Sham dan S.M. Hisham (1990). "Manipulation of Nutrient Solution on Growth and Yield of Hydroponically Growth Cucumis Melo", kertas kerja di **FFTC/UPM 1990. International Hydroponic seminar of Hydroponic Culture of High Value Crops in Tropics**. 25-27 November 1990, UPM. (Vol. II).
72. Mokhtaruddin, A.M., Ghulam Mohd. Hashim, Zainol Eusoff, Mahmud Abdul Wahab dan Abu Talib Bachik (1990). Cultural Practices under Rubber: Effects on Soil Erosion. **Proc. Soil Sci. Conference of Malaysia 1990**, Malacca (In press).
73. Mokhtaruddin, A.M. and W.H. Wan Sulaiman. (1990). Ex-mining Land - Characteristics, Constraints and Methods of Improvement. National Sem. Ex-mining Land and BRIS Soil - Prospects and Profit. **Kejora Mngmt Services, Kuala Lumpur**, 15-16 October 1990.
74. Mardan, M., Khalid, R. dan Yatim (1990). Nesting Biologi and Foraging Activity of Carpenter Bee on Passion Fruit. 6th Inter. Symp. on Pollination, Tillburg, Holland, Aug. 27-31, 1990.
75. Mardan M., Otis, G.W. and McGee, K. (1990). Age Polyethism in *Apis dorsata*. 11th. Inter. Cong. IUSSI, Bangalore, India, Aug. 1990.
76. Muhamad Muid dan Ahmad Anuar Sairi (1990). Acceptance of *Apis dorsata* wax Foundation Comb. by *Apis cerana* Indica honey Colonies. Asia Pacific Conference on Entomology Chiangmai, Thailand, Nov. 1990.
77. Mohd. Fauzi Ramlan dan Mahmud T. Muda Mohamed (1990). "Growth Analysis on Three Varieties of Chilli". **MSAB Publication**. Februari 1991.
78. M.F. Ramlan, B.M. Hasan dan M.Z. Karim (1990). "Physiological Studies on Carambola Plants under Natural Condition. I. Leaf Age, Leaf Growth Rate and Chlorophyll Content". **MSAB Publication**. Disember 1990.
79. M.F. Ramlan, B.M. Hasan dan M.Z. Karim (1990). "Physiological Studies on Carambola Plants under Natural Condition. II Net Photosynthesis and Stomatal Conductance". **MSAB Publication**. Disember 1990.

80. Noorizan M., Norazam S. (1990). "Current Approach in Landscape Management - A Malaysian Perspective", kertas kerja di **International Horticultural Conference**, 7-8 Ogos 1990, UPM.
81. Noorizan M. dan Nor Ain R. (1990). Taman Dalam Kontek Senibina Landskap. **Jalanbicara Seminar Taman dan Manusia**, m.s. 13-21.
82. Noriah, M.N. dan Z.H. Shamsuddin (1991). Effect of Inorganis-N and Nativer Rhizobia on Nodulation of Soybean, Sitratro and Groundnut. *Proc. Soil Science Conference of Malaysia 1990*, Malacca (In press).
83. Nurizan, Y. (1990). Pekerjaan dan Pendapatan: Satu Petunjuk untuk Mendapatkan Rumah Awam di Kuala Lumpur dan Seremban. *Kajian Keluarga Vol. VIII*, No. 1 106-120.
84. Nurizan, Y. (1991). A Profile of Urban Poverty in Malaysia. *Journal of Contemporary Asia*. Vol. 21 No. 2. 212-221.
85. Palacio, I.P., Abd. Ghani Ibrahim dan Rohani Ibrahim (1990). Demography of the Malaysian Complex of *Dacus dorsalis*. *J. Malay. Appl. Biol.* (Accepted for publication).
86. Rohani Ibrahim dan Ghazali Jamalludin (1990). Grape pests and their control. *Intr. Hort. Conf.* 7-9 August 1990.
87. R.M. Raja Harun dan A. Muhamad (1990). "The Effect of Foliar Application of "Nitrosol" on Hydroponically Grown Muskmelon (*Cucumis melo*)". *Transaction of Malaysian Society of Plant Physiology*. 87-89.
88. R.M. Raja Harun dan A. Muhamad (1990). "The Use Coconut Potting Mix in the Soilless Cultivation of Tomatoes, kertas kerja di **International Horticultural Conference**. 7-9 Ogos 1990, UPM.
89. Radziah, O. dan Z.H. Shamsuddin (1990). Growth of *Sesbania rostrata* on Different Components of Tin Tailings. *PER-TANIKA* 13(1): 9-15.
90. Ridzwan A. Halim dan Mary J. Hattendorf (1990). "Using Canopy Temperature to Assess Plant Water Status". *Transactions of the Malaysian Society of Plant Physiology*. Vol. 1, 1990. In Hamid Lazan et. al. (eds).
91. R.M. Raja Harun, D.A. Hall, R.A.K. Szmidt dan G.M. Hitchon (1990). "Melon Cultivation in Organic and Inorganic Substrates" kertas kerja di **Symposium on Horticultural Substrates and their Analysis**. 10-14 September 1990, Guernsey. *Act Horticulture* (In press).
92. Ridzwan A. Halim (1990). "Use of SAS in the Teaching of Experimental Design and Analysis", kertas kerja di **SAS User Group of Singapore (SUGAS) 2nd. Annual Conference**. 27 September 1990, Raffles Convention Center, Singapore.
93. Ridzwan A. Halim dan Mohd. Razi Ismail (1990). "Leaf Area Prediction Model for Rock Melon as Affected by Nutrient Concentration", kertas kerja di **Proc. FFTC/UPM International Seminar on Hydroponic Culture of High Value Crops in the Tropics**, Vol. II, 25-27 November 1990, Serdang.
94. Ridzwan A. Halim (1990). "Developing Feed Resources for Ruminant Production". *Options (Surat Berita Pusat Kajian Dasar Pertanian, UPM)* 5(1): 4-6.
95. Rohani, I & A.G. Ibrahim (1990). Hand-book for the Identification of *Dacus dorsalis* Complex. *Proceedings of the Course on the First South East Asia Training Course on Fruit-flies*.
96. Radziah, O. (1991). Azorhizobium inoculation, phosphorus and sulphur application on growth and stem nodulation of *Sesbania rostrata* on sandy loam tin tailing. *Proc. soil Science Conference of Malaysia 1990*. Malacca (In press).
97. Shamsuddin, Z.H., Loneragan, J.F. dan Dilworth, M.J. (1990). Tolerance of Winged bean (*Psophocarpus tetragonolobus*) and its symbiotic system to Soil Acidity. *Second Intl. Sympo. Plant-soil Interactions at Low pH*. Beckley. Virginia, U.S.A.
98. Shamsuddin, Z.H. (1990). Soil Acidity Effects on *Bradyrhizobium-legume Symbiosis*. *Proc. 1st. Seminar on National Biotechnology Programmes*, Penang. p. 148-149.
99. Shamsuddin, Z.H. dan R. Kasran (1990). Use of Palm Oil Mill Effluent and Ajinomoto Factory Effluent as Organic Fertilizers for Cowpea (*Vigna unguiculata* (L.) Walp.) and Mustard Greens (*Brassica chinensis*) on tin tailing sand. *Proc. Intl. Seminar on the Use of Organic Fertilizers in Crop Production Suweon*. Korea.
100. Shamsuddin, Z.H. dan J. Zarinah (1991). Effects of Plant Age and Water levels on Growth and Nodulation of Soybean on Peat. *Proc. Soil Science Conference of Malaysia*. 1990. Malacca (In press).
101. Syed Omar, S. R., Z. Shamsuddin dan Y. Zuraidah (1990). Effect of Lime and Gypsum on Soil Aluminium and Growth of Groundnut. *Proc. Soil Science of Malaysia 1990*, Malacca (In press).

102. Shamsuddin, J., I. Jamilah, dan H.A.H. Sharifuddin (1991). Changes in Soil Solution Properties of Acid Soils Affected by Dolomitic Limestone, Gypsum and Rock Phosphate Applications. Proc. Soil Science Conference of Malaysia, 1990. Malacca pp. 45-52.
103. Syed Omar, S.R., Z.H. Shamsuddin, J.Y. Zuraidah, J.C. Wyne, and G.H. Elkan, 1991. Use of Lime, Gypsum and their Combinations to Improve Nodulation and Yield of Groundnut in an Acidic Soil. In: Plant and Soil. Interaction at Low pH. (Ed. R.J. Wright et al.) pp 275-280.
104. Shamsuddin, Z.H.J.F. Loneragan, and M.J. Dilworth (1991). Tolerance of Winged Bean (*Phophocarpus tetragonolobus*) and its Symbiotic System to Soil Acidity. Plant and Soil (In press).
105. Shamsuddin, J., I. Fauziah, and H.A.H. Sharifuddin (1991). Effects of Limestone and Gypsum Applications to a Malaysia Ultisol on Soil Solution Composition and Yields at Maize and Groundnut. Plant and Soil 134: 45-52.
106. Stoops, G., Shi Guang Chun dan S. Zauyah (1990). Combined Micromorphological and Mineralogical Study of a Laterite Profile on Graphite Sericite Phyllite from Malacca (Malaysia). Bull. Geol. Soc. Belgium. Vol. 99(1): 79-92.
107. Shamsuddin, H.A.H., I. Chek Fauziah dan A.R. Zaharah (1990). Techniques of Soil Testing and Plant Analysis and their Utilization for Crop Production in Malaysia. Commun. in Soil Sci. Plant Anal. 21(13-16: 1959-1978).
108. Sariah, M. (1990). Infection of Chili by *Cercospora capsici*. Pertanian 13: 321-325.
109. Sariah Meon dan Zakaria Hussin (1990). Current Research Activities in UPM - Basal Stem Rot of Oil Palm. Ganoderma Workshop, PORIM, 1990.
110. Sijam, K., C.J. dan Gitaitis, R.D. (1990). An Agar Medium for the Identification and Isolation of *Xanthomonas campestris* pv. *vesicatori* from Tomato and Pepper Seeds. Phytopathology - under review.
111. Sijam, K., C.J. Chang dan Gitaitis, R.D. (1990). A Semiselective Medium for Detection and Isolation of *Xanthomonas camperhis* ov *vesicaboria* from Tomato Seeds. Phytopathology.
112. Siti Nor Yaacob, Ariffin Nopiah, Ahmad Hariza Hashim dan Abdullah Al-Hadi Hj. Muhamed. (Reviewed and Accepted for Publication, Bil. 6, 1990/91 issue). "Perkaitan beberapa Faktur Latarbelakang Keluarga dengan Pencapaian Akademik Pelajar", *Jurnal Pendidikan Guru*, 21 pp.
113. Siti Nor Yaacob, Abdullah Al-Hadi Hj. Muhamed dan Nor Harlina Imaduddin (1990). "Adolescent Self-Image: Relationship between Selected Family Variables, Gender and Mastery and Coping", *Malaysia Journal of Family Studies* 2, p. 25-34.
114. Sayed M.Z. Hasan (1990). "Isozymes Inheritance and Linkage in Hybrid Solanum Melongena 'Primitive Cult' XS. Lichtenstenii Willd". *Malaysian Applied Biology*. 19(2) (In press).
115. Sayed M.Z. Hasan (1990). "Sifat-sifat Tumbuhan yang Mempengaruhi Kesan Penyerapan (Penetration) Racun Herba Serap". *PENGEMBANGAN* 13(1), 16-22.
116. Sayed M.Z. Hasan dan Lester, R.N. (1990). "Crossability Relationships and In-Vitro Germination of F1 Hybrids between Solanum Melongena L. XS. Pandufirome E. Meyer (S. Incanum sen. ampl. *SABRAO J.* vol. 22 (In press).
117. Sayed M.Z. Hasan (1990). "Crossability Relationships of Solanum Melongena L. and Its Nearest Species", kertas kerja di **International Horticultural Conference**, 7-9 Ogos 1990 UPM. (Proceeding in press/abstract pg. 19).
118. Sariyah M., Siti Aishah H. dan Mohd. Razi Ismail (1990). "Effects of Different Salinities on Growth and Yield of NFT-Grown Tomatoes", kertas kerja di **International Seminar on Hydroponics Culture of High Value Crops in the Tropics**. 25-27 November 1990, UPM.
119. Siti Hajar Ahmad (1990). "Grading of Cut Flowers in Malaysia", kertas kerja di **International Conference on Orchids and Ornamental Plants**. 22-28 Ogos 1990, Kuala Lumpur.
120. Sariam Othman dan Surjit Singh (1990). "Peringkat-peringkat Pembentukan Tangkai Padi". *Teknologi Padi*. MARDI, Serdang.
121. Surjit Singh, Yusof Ibrahim dan Rajan Amartalingam (1990). "Simulation of Potential Yield of Three Rice Cultivars with Different Assimilate Partitioning at Three location in Peninsular Malaysia", kertas kerja di **Workshop on Simulation of Potential Production of Rice**, 12-17 November 1990, China National Rice Research Institute, Hangzhou, China.
122. Sayed M.Z. dan Lester, R.N. (1990). "Comparative Micromorphology of the Seed Surface of *S. melongena* and Allied Species". *PERTANIK* 13(1), 1-8.
123. Saleh M.Z. dan M.N. Ramli (1990). "Unexploited Food Legume Crops in Malaysia and their Future Potential", kertas kerja di

Workshop on the Unexploited Food Legume Crops in Asia (FAO-UNDP), 30 Oktober - 4 November 1990, Chiangmai, Thailand (In press).

124. S.J. Kays, M. Tengku Muda Mohamed dan M.R. Hall (1990). "Genotypic Variation in Leaf Inclination in Sweet Potato Canopies". *Malaysian Appl. Biol. Jour.*, Vol. 19 No.2.

125. Siti Hajar Ahmad, Mahmud T. Muda Mohamed dan Lee Kar Kong (1990). "Loss in Weight and Vitamin C of some Selected Vegetables Displayed by Farmers' Market Method", kertas kerja di International Horticultural Conference, 7-9 Ogos 1990, UPM.

126. Siti Hajar Ahmad dan Mahmud T. Muda Mohamed (1990). "Quality of Dendrobium Ekarpol Panda Treated with Silver Thiosulphate (STS)", kertas kerja di **International Conference and Exhibition on Orchids and Ornamental Plants**, 22-28 Ogos 1990, Kuala Lumpur.

127. Suparjo, N.M., R.A. Halim, S. Jalaludin, C. Abu Bakar dan O. Ahmad Shokri (1990). "Quality of Asystasia Leaves and Stems 60 Days After Seeding at Different Shad Levels", kertas kerja di **Resource Utilization for Livestock Production in Malaysia. Proc. 13th Malaysian Society of Animal Production Ann. Conf.**, 6-8 Mei 1990, Melaka. pp. 168-172. In Wan Zahari et al. (eds.)

128. T.C. Yap, M. Chai dan M.S. Saad (1990). **Pembiakbakaan Tumbuhan**. Dewan Bahasa dan Pustaka, Kuala Lumpur.

129. T.C. Yap dan M.S. Saad (1990). **Improvement of Food Crops: Rice Corn and Sweet Potato. Progress Report 1989**. Fakulti Pertanian, UPM.

130. Wan Sulaiman, W.H., S. Singh, and Y. Ibrahim (1990). Use of Crop Growth Simulation Models in Evaluating Crop Suitability and Potential Productivity. National Sem. on Land Evaluation for Agric. Development. Kuala Lumpur, Aug. 1990.

131. Wan Sulaiman, W.H. Rainfed Yield of Grain Maize *Zea mays* L.) under two Agroecological Environments in Malaysia. In Penning de Vries et. al. (ed): **Systems Analysis Monograph**. Pudoc, Wageningen (In press).

132. Wan Sulaiman, W.H. (1991). Simulating Water-limiting Effects on Production of Grain Maize (*Zea mays* L.). *Proc. Soil Sci. Conf. Malaysia 1990*. Malacca (In press).

133. Wan Sulaiman W.H. dan W.Z. Rushidah (1990). Simulating the Potential Production of Maize (*Zea mays* L.). cv Suwan I in Malaysia. In Penning de Vries et al. (ed): **Systems Analysis for Rice Production - A Simulation Monograph**. Pudoc. Wageningen (In press).

134. Wan Sulaiman, W.H., I. Marson, dan A.M. Mokhtaruddin (1990). Tests on a Rainfall Simulator for Evaluating Soil Erodibility. *Pertanika* 13(2): 239-246.

135. Wan Mohamad W. Othman (1990). "Ureides as an Index of N₂ Fixation of Cowpea and Common Bean. **Book of Abstracts, Dept. of Field Crops and Grassland Sci., Wageningen Agric. University, The Netherlands** (compilation in progress).

136. Wong, K.C. dan Saichol, K. (1990). "Dimocarpus Longan Lour. In: E.W.M. Verheji and R. E. Coronel (eds.). **Plant Resources of South-east-asia - Edible Fruits and Nuts**. Pudoc. Wageningen (In print).

137. Wong, K.C. dan Gan, Y.Y. (1990). "The Diversity of *Dimocarpus Longan* subsp. *malesianus* var. *malesianus* in Sarawak", kertas kerja di **International Horticultural Conference**, 7-8 Ogos 1990, UPM.

138. Wong, K.C. (1990). "Studies on the Propagation. Seed Storage and Fruit Storage of *Dimocarpus Longan* subsp. *malesianus* var. *malesianus*", kertas kerja di **International Horticulture Conference**, 7-8 Ogos 1990, UPM.

139. Wong, K.C. (1990). "The Application of SAS Cluster Analysis in the Numerical Taxonomic Study of the Taxon *Dimocarpus Longan*", kertas kerja di **4th Annual Conference, SAS Users Association of Malaysia**, 10-11 Oktober 1990, Kuala Lumpur.

140. Wongsiri, S., Limbipichai, K., Tangkanasing, P., Mardan, M., Rinderer, T., Sylvester, H.A., Koeniger, Otis, G. (1990). Evidence of Reproductive Isolation of *Apis andeniformis* from Sympatric *Apis Florea* (Fabricius, 1787). *Apidologie* 21: 47-52.

141. Yusof, I. (1990). Influence of Aphidicides on the Population Growth of *Aphis craccivora* Koch. *J. Malay. Appl. Biol.* (In press).

142. Yusof, I. (1990). Occurent of *Ascheronia Placentae* and *Hypocrella Raciborskii* on *Asterole canium ungulata* in Durian (*Durio zibethinus*). Sent for Publication in the **Biocontrol Sci. and Technology**.

143. Zakaria, W. (1990). "Kajian Sisa Pokok Kacang Tanah (*A. hypogaea* cv. Matjan): Kesan Terhadap Percambahan dan Tumbesaran Radikal". **Berita Penyelidikan** No. 4 Bil. 1: 5(Abst).

144. Zaitun Yassin dan R.D. Terry (1990). Health Characteristics of Rural Elderly Malay Females in Selected Villages in Negeri Sembilan. **Medical Journal of Malaysia**. 45(4): 310-318.

145. Zaitun Yassin dan R.D. Terry (1990). Anthropometric of Rural Elderly Malay Females in Malaysia. Accepted for Publication in *Ecology of Food and Nutrition*.
146. Zaitun Yassin dan R.D. Terry (1990). Dietary Patterns of Rural Elderly Females in Malaysia. *Ecology of Food and Nutrition*, 24: 213-221.
147. Zaharah, A.R., M. Ahmad Sahali dan H.A.H. Sharifuddin, (1990). Kajian Penentuan Kawasan Akar Aktif Tanaman Kelapa Sawit dengan Menggunakan Isotop Radioaktif P-32, Prosiding Persidangan Sains dan Teknologi Nuklear 20-21 Februari 1990. pp. 154-158.
148. Zaharah, A.R. dan H.A.H. Sharifuddin. 1990. Pengukuran kadar pengikatan nitrogen dari udara oleh legumpastura dengan menggunakan kaedah pencairan isotop ¹⁵N. Prosiding Persidangan Sains dan Teknologi Nuklear 20-21 Februari 1990. pp. 108-119.
149. Zaharah, A.R. dan H.A.H. Sharifuddin. 1990. The initial and residual value of phosphorus from apatite rock phosphates and superphosphate as measured by ³²P dilution technique. *PERTANIKA* 13(1): 27-31.
150. Zaharah, A.R. M. Ahmad Sahali, dan H.A.H. Sharifuddin. 1990. The relative efficiency of different phosphate fertilizer sources for annual crops. Paper presented at the Technical Seminar of FASPHOS 16 Februari 1990, Tawau, Sabah.
151. Zauyah, S., S. Paramanthan dan h. Eswaran. 1990. Minerals in soils of P. Malaysia. Transactions of 14th Int. Cong. Soil Sc. Kyoto. Vol. VII: 94-99.
152. Zauyah, S., S. Paramanthan and J.S. Lim. 1990. Implication of the changes in Soil Taxonomy to the classification of Oxisols and Ultisols in P. Malaysia. Proc. Workshop on recent development in soil genesis and classification. Kuala Lumpur, pp. 43-47.
153. Zauyah, S. 1990. Use of micromorphology in the classification of soil in P. Malaysia. Proc. Workshop on recent developments in soil genesis and classification. Kuala Lumpur, pp. 157-160.
154. Zauyah, S., dan S. Paramanthan. 1990. Soil classification in Peninsular Malaysia. In: Soil Classification. Report of Int. Confr. on Soil Classification, Kazakstan, USSR. Ed. B.G. Rozanov. p. : 195-205.
155. Zauyah, S. dan G. Stoops. 1990. A study of the ferrallitic weathering of an amphibole schist in P. Malaysia. *Pertanika* 13(1): 85-93.
156. Zakaria, W. dan T.C. Kaspar. 1990. "Effect of Maize Hybrids". *Malay. appl. Biol.* 19(1): 29-36.
157. Zakaria, W. dan A.R. Razak. 1990. "Effect of Groundnut Plant Residues on Germination and Radicle Elongation of Four Crop Species". *PERTANIKA* 13(3). (in press).
158. Zakaria, Sidek dan Lim Tong Kwee (1990). Occurance of a Mosaic Virus in Guava. *PERTANIKA* 13(3): 357-359.

SEMINAR/BENGKEL/KURSUS

1. Kursus Perlembahan Tropika untuk peserta-peserta dari ASEAN dan Vietnam di UPM, Serdang, 2-10 September 1990.
2. Kursus Lepastuai Bunga-bunga Keratan anjuran FAMA/UPM untuk pegawai-pegawai pengembangan agensi tersebut diadakan pada 8-12 Oktober 1990.
3. International Horticultural Conference 1990 anjuran ISHS/UPM (peringkat antarabangsa) untuk pada saintis, pegawai penyelidik, orang awam dan pelajar diadakan pada 7-9 Ogos 1990 di PPPL, UPM.
4. Kursus Pendek dalam Bidang Kultur Tisu anjuran Fakulti Pertanian untuk 7 orang pegawai dari Jabatan Pertanian pada 29 april hingga 10 Mei 1991.
5. Bengkel antarabangsa Simulasi dan Analisis Sistem bagi Pengeluaran Padi anjuran bersama CABO dan TPE (Wageningen, Netherlands), IRRI (Filipina) dan UPM diadakan pada 6 hingga 11 Mei 1991.
6. Kursus analisis Tanah dan Tumbuhan 1990 pada 12-24 November 1990. Peserta 27 orang.
7. International Seminar of Hydroponic Culture of High Value Crops in Tropic di Genting Highland pada 25-27 November 1990.

FAKULTI PERHUTANAN

DEKAN

Prof. Madya Dr. Yusuf Hadi

KAKITANGAN

Jumlah kakitangan Fakulti Perhutanan bagi tahun akademik ialah 99 orang. Pecahan menurut kategori:-

Jabatan	Kategori			
	A	B	C	D
Pejabat Dekan	4	-	10	29
Jabatan Pengurusan Hutan	12	-	7	5
Jabatan Pengeluaran Hutan	16	-	11	5
Jumlah	32	-	28	39
Jumlah Besar				99

Cuti Belajar

Seramai tujuh orang pensyarah belajar di luar negeri dan 3 orang belajar dalam negeri yang sedang mengikuti Ph.D. Seorang pensyarah sedang cuti Sebatikal.

TABURAN PELAJAR MENURUT SESI AKADEMIK - B.S. PERHUTANAN Sesi Akademik

Tahun	85/86	86/87	87/88	88/89	90/91
Tahun 1	36	24	49	43	58
Tahun 2	38	36	14	49	51
Tahun 3	24	38	36	14	41
Tahun 4	20	23	38	35	49
	118	111	137	141	199

PEMERIKSA LUAR B.Sc./M.Sc.

Prof. I.S. Ferguson

SEMINAR AKADEMIK

1. Application of Computer Modelling in Forest Plantation disampaikan oleh En. Lim Kee Leng pada 18 Oktober 1990.
2. Penglihatan Pengusaha Bumiputra Dalam Industri Perkayuan di Malaysia disampaikan oleh Tuan Haji Ramli Isa (Kayu Sedia Sdn. Bhd.) pada 20 September 1990.
3. Current Status, Opportunities and Challenges of the Malaysian Forest Products Industries disampaikan oleh En. Tong Kok Hung (MTIB) pada 4 Oktober 1990.
4. Recent Developments in Tree Breeding disampaikan oleh Dr. Mike Slee (Australian National University, Canberra) pada 7 Januari 1991.
5. Breeding Biology of *Acacia mangium* and *Acacia auriculiformis* disampaikan oleh En. Zakaria Ibrahim (FRIM) pada 26 Februari 1991.
6. Wood Plasticisation and Its Application disampaikan oleh Prof. Nobus Shiraishi (Kyoto University) pada 16 Mac 1991.
7. Biochemistry of Wood Decay and Its Application disampaikan oleh Prof. Shimada (Kyoto University) pada 16 Mac 1991.
8. Bioeconomic Modelling of Agroforestry Systems disampaikan oleh Dr. Paul Wojtkowski (University College of North Wales Bangor, U.K.) pada 6 Mei 1991.

Kuiz Sains Semulajadi 1990

Pada 23 Ogos 1990 di Pusat Dagangan Dunia Putra, Kuala Lumpur.

SEMINAR YANG DIADAKAN

1. Workshop on Downstream Timber Processing pada 3-15 Disember 1990 di P.J. Hilton. UNIDO/UPM.
2. 3rd. International conference on plant protection in the tropics di Genting Highlands, March 20-23 1990.

PENYELIDIKAN

1. Hamami Sahri: Tissue proportion of *Acacia mangium* and its relation to its physical-mechanical properties.
2. Nik Muhamad Majid: Foliar sampling guidelines of *Acacia mangium* for nutritional and growth assessment. Source of funding: Universiti Pertanian Malaysia.

3. Nik Muhamad Majid: Effects of thinning on the growth and nutrition of *Acacia mangium*. Source of funding: Universiti Pertanian Malaysia.
4. Nik Muhamad Majid: Effects of natural forest conversion to plantation forest on soil properties and tree growth. Source of funding: Universiti Pertanian Malaysia.
5. Nik Muhamad Majid: Determination of nutrient requirements of teak (*Tectona grandis*). Source of funding: Universiti Pertanian Malaysia.
6. Nik Muhamad Majid: Determination of nutrient requirements of rattan under greenhouse conditions. Source of funding: Universiti Pertanian Malaysia.
7. Nik Muhamad Majid: Interplanting of rattan with rubber trees. Source of funding: Universiti Pertanian Malaysia.
8. Nik Muhamad Majid: The potential of agroforestry practice in the rehabilitation of ex-mining areas. Source of funding: Universiti Pertanian Malaysia.
9. Nik Muhamad Majid: Feasibility of using fast-growing timber species for reclamation of ex-mining areas. Source of funding: U.S. National Academy of Science (Board on Science and Technology for International Development, BOSTID).
10. Razali Abdul-Kader: Influences of treated wood surfaces in the bonding of resinous wood.
11. Razali Abdul-Kader: Properties of low-density particleboards manufactured from fast-growing indigenous species.
12. Razali Abdul-Kader: Properties of MDF manufactured from fast-growing plantation species.
13. Wan Sabri, W.M.: Improving the Recreation Area Data Information System (RADIS).
14. Wan Sabri, W.M.: Visitors preferences and choice for outdoor recreation area visits.
15. Wan Sabri, W.M.: Interpretation of Bukit Teresek Trail in Taman Negara.
16. Wan Sabri, W.M.: Preferences for area and activity at Shah Alam Agriculture Park, Selangor.
17. Wan Sabri, W.M.: The visitors need for interpretation at Taman Negara.
18. Wan Sabri, W.M.: Sustainable Development of Taman Negara: Its Impact on the Local Population.

PENERBITAN

1. Ahmad Said Sajap. 1990. Serangga perosak perabot kayu. *Majalah Pengembangan*. 13: 2-28.
2. Ahmad Said Sajap dan Kiranjeet Kaur. 1990. Histopathology of *Metarhizium anisopliae*, and entomopathogenic fungus, infection in the termite *captotermes curvignathus*. *Pertanika*. 13:331-334.
3. Abdullah Mohd dan Wan Sabri Wan Mansor. 1990. A 50 - year perspective of Taman Negara: Its origin, present and future management. Paper submitted to the *Malaysian Forester*.
4. Bimal K. Paudyal dan Nik Muhamad Majid. 1990. Nutritional levels of different aged *Acacia mangium* Willd. plantations in Kemasul Forest Reserve, Pahang, Peninsular Malaysia. *J. Trop. Ecol.* 22pp. (In Review).
5. Bimal K. Paudyal dan Nik Muhamad Majid. 1990. Preliminary thinning guideline for *Acacia mangium* Willd. plantations in Kemasul Forest Reserve, Peninsular Malaysia. *J. Trop. For. Sci.* 22pp. (In Review).
6. Ismail Harun and Nik Muhamad Majid 1990. Potential of agroforestry in the utilization of idle land in Peninsular Malaysia. Paper presented at the National Seminar on Land Evaluation for Agricultural Development, 20-22 August, 1990. Kuala Lumpur. 18 pp.
7. Kamaruzaman Jusoff and Nik Muhamad Majid 1990. Inventory and monitoring of forest wetland resources of ASEAN. *J. For. Ecol. and Mgt.* 34: 63-79.
8. Kamaruzaman Jusoff and Nik Muhamad Majid 1990. An analysis of soil disturbances from logging operation in a hill forest of Peninsular Malaysia. *J. For. Ecol. and Mgt.* (In Press).
9. Kamaruzaman Jusoff and Nik Muhamad Majid 1990. Soil disturbance from logging operation in hill forest of Peninsular Malaysia. *J. Soil Use and Mgt.* (In Press).
10. Kamis Awang and Razali Abdul Kader. 1990. Developing technologists for the wood-based sector. *Asia Pacific Timber Conference*. 24-26 September Kuala Lumpur: Malaysian Timber Industry Board. 12p.
11. Kawai, S., Razali Abdul Kader, Pulido, O.R., Sasaki, H. 1990. Low density oriented particleboard made from *Albizia falcata*. *Mokuzai Gakkaishi* 36 (7): 579-583.
12. Mohd. Hamami Sahri. 1990. (Penyusun). *Kamus Istilah Perhutanan - Sains kayu dan Hasil Hutan*. Dewan Bahasa dan Pustaka, Kuala Lumpur.
13. Mohd. Hamami Sahri. 1990. The Durability of Pehmol-Resorcinol Formaldehyde Glue Joints of Three Malaysian Hardwood Species. *Pertanika* 13(2). 159-163.
14. Mohd. Hamami Sahri and Kee Teck Khoon. 1990. Integrity of Phenol-Resorcinol Formaldehyde and Urea Formaldehyde Glue Joints on Three Fast Growing Tropical Hardwood Species. *Malaysian Forester*. In-print.
15. Mohd. Hamami Sahri dan Ling Kwong Hung. 1990. Retensi Bersih Garam Pengawet Kayu Menggunakan Kaedah Atomic Absorption Spectrophotometer. *Proceeding Simposium Kimia ke-4*. 4-6 September, 1990. pp 34-36.
16. Mohd. Hamami Sahri dan Shashiah Abd. Karim. 1990. Heat content and the potential of some Malaysian hardwood species for energy production. *Proceeding of Asia-Pacific Regional Conference on Engineering for the Development of Agriculture*. pp 510-520.
17. Mohd. Hamami Sahri, Razali Abdul-Kader, Kee, T.K. 1991. Gluing properties of three fast-growing plantation species. In: *Proc. Regional Symp. Recent Development in Tree Plantations of Humid/Subhumid Tropics of Asia*. Serdang: Unive. Pertanian Malaysia (In press).
18. Nik Muhamad Majid. 1990. Potential of agroforestry in the rehabilitation of ex-mining land. Paper presented during the National Seminar on ex-mining land and Bris Soil : Prospects and Profit. 15-16 October, 1990. Kuala Lumpur.
19. Nik Muhamad Majid. 1990. Forestry and agricultural sustainability in Malaysia. U.S. National Research Council Workshop on agricultural sustainability in the humid tropics. Nov. 23, 1990, Bangkok, Thailand.
20. Nik Muhamad Majid dan Ismail Harun. 1990. Integrated farming under rubber plantations in Peninsular Malaysia. *Agroforestry Systems and Technologies*. BIOTROP Special Publ. No. 39: 121-133.
21. Nik Muhamad Majid, Awang Noor Ab. Ghani dan Jamaluddin Abdul Hamid. 1990. Economic appraisal of sheep grazing under rubber plantation in Peninsular Malaysia. *Agroforestry Systems and Technologies*. BIOTROP Spec. Publ. No. 39 : 197-209.
22. Nik Muhamad Majid dan T.M. Ballard. 1990. Effects of foliar application of copper sulphate and urea on the growth of lodge pole pine. *Forest Ecol. and Mgt.* 37: (In press).
23. Nik Muhamad Majid dan Bimal K. Paudyal. 1990. Pruning trial for *Acacia mangium* Willd. plantation in Peninsular Malaysia.

J. For. Ecol. and Mgt. 20pp (In press).

24. Razali Abdul-Kader, Kuo, H.S. 1991. Properties of particleboards manufactured from fast-growing plantation species. In: **Proc. Regional Symp. Recent Development in Tree Plantations of Humid/subhumid Tropics of Asia**. Serdang: Univ. Pertanian Malaysia (In press).
25. Sasaki, H., Wang, Q., Kawai, S., Razali Abdul-Kader. 1990. Utilization of thinnings from Sabah hardwood plantations: Properties of laminated veneer lumber and the application of flanges of composite beams with particleboard web. In: Wang, S.Y., Tang, R.C. (eds.): **Proc. 1990 Joint International Conf. Processing and Utilization of Low-grade Hardwoods and International Trade of Forest-related Products**. Taipei: Nat. Taiwan Univ. 173-182p.
26. Sheikh Ali Abod dan A.D. Webster. 1990. Shoot and root pruning effects on the growth and water relations of young *Malus*, *Tilia* and *Betula* transplants. **J. Hort. Sc.** 65(4): 451-459.
27. Sheikh Ali Abod. 1990. Effects of nutrient deficiencies on the root regenerating potential and growth of *Pinus carinbaea* and *P.kesiya* seedlings. **Pertanika** 13(2):145-150.
28. Sheikh Ali Abod dan A.D. Webster. 1991. The influence of root pruning on subsequent root and shoot growth of *Malus*, *Tilia* and *Betula*. **J. Hort. Sc.** 66(2):227-233.
29. Sheikh Ali Abod dan A.D. Webster. 1991. The influence of foliar sprays and tetacyclasis or paclobutrazol on the growth and water use by transplanted *Malus*, *Tilia* and *Betula* stocks. **J. Hort. Sc.** 66(1): 85-94.
30. Sheikh Ali Abod dan A.D. Webster. 1991. Carbohydrates and their effects on growth and establishment of young *Tilia* and *Betula*: I. Seasonal changes in soluble and insoluble carbohydrates. **J. Hort. Sc.** 66(2):235-246.
31. Sheikh Ali Abod dan A.D. Webster. 1991. Carbohydrates and their effects on growth and establishment of young *Tilia* and *Betula*: II. The early season movement of carbohydrates between shoots and roots. **J. Hort. Sc.** (In press).
32. Sheikh Ali Abod. 1982. General guidelines for the cultivation of bamboos in Malaysia. Report submitted to the Faculty of Forestry, UPM. 17p.
33. Sheikh Ali Abod et al. 1990. Consultancy reports on Forest Plantation Research in Sabah, submitted to the Forestry Department of Sabah. Vol (84p) and Vol 2 (143p).
34. Sheikh Ali Abod dan F.H. Abood. (Editors). 1990. Research and Publications in 1988/89 - A summary of works at Faculty of Forestry, UPM, Serdang, Malaysia. 79p.
35. Wan Sabri, W.M. (1990). "The touch and see nature trail: With special provision for handicapped and disabled persons. Report submitted to Sabah Parks, Sabah, Malaysia.
36. Wan Sabri, W.M. (1990). Tasik Cini ecotourism and recreational development proposal. Report submitted to Malaysian Overland Adventures. Sdn. Bhd., Kuala Lumpur, Malaysia.
37. Wan Sabri, W.M. (1990). Recreation development on ex-mining land. Kertas kerja di Seminar Kabangsaan Ex-Mining Land and Bris Soil-Prospects and Profit, 16-15 Oktober, 1990, Kuala Lumpur.
38. Wan Sabri, W.M., Abd. Kadir Abu Hashim dan Sh. Azura Sy. Ibrahim (1990). Analisa pelawat di Taman Negara bagi tahun 1988. Laporan 2, Teras Penyelidikan Rekreasi Luar, Perhutanan Bandar dan Pelancongan, UPM, Serdang.
39. Wan Sabri, W.M., Fuad Yusof dan Sh. Azura Sy. Ibrahim. (1990). Analisa pelawat di Taman Negara bagi tahun 1989. Laporan 1, Teras Penyelidikan Rekreasi Luar, Perhutanan Bandar dan Pelancongan, UPM, Serdang.
40. Wan Sabri, W.M., Ghazali Ismail, Faridah Hanum Ibrahim dan Abdullah Mohd. (1990). Kinabalu Park Development and Management Plan. A report submitted to the Sabah Parks Board of Trustees, Sabah.
41. Wan Sabri, W.M. (1990). Development Plan for Kinabalu Nature - Golf Resort. A report submitted to the Sabah Parks Board of Trustees, Sabah.
42. Yusof Hadi. 1990. A spreadsheet model for planning the sustainable management of Malaysian Forest. Paper presented at VIX IUFRO World Congress Montreal, 5-11 August 1990. 9p.

FAKULTI KEDOKTORAN VETERINAR DAN SAINS PETERNAKAN

DEKAN

Prof . Dr. Hj. Abdul Latif bin Ibrahim

KAKITANGAN

Jumlah Kakitangan

JABATAN	KATEGORI A	KATEGORI B	KATEGORI C	KATEGORI D
Pejabat Dekan	2	1	6	8
Jab. Sains Peterernakan	22	3	21	22
Jab. Pathologi dan Mikrobiologi Veterinar	16	4	17	11
Jab. Pengajian Klinikal Veterinar	14	6	3	11
Jumlah	54	14	47	52
Jumlah Besar				167

Perlantikan Baru

Seorang Pensyarah dan 3 Tutor dan seorang Pembantu Am Rendah dilantik.

Perletakan Jawatan

Dua orang pegawai meletak jawatan.

Cuti Belajar

Dua orang Pensyarah dan 3 orang Tutor sedang melanjutkan pelajaran.

Seorang pensyarah sedang bercuti sabatikal di University of California, Davis.

PERKARA-PERKARA AKADEMIK

Ijazah Lanjutan

Seramai 6 orang mengikuti program Ph.D. (4 di UPM dan 2 di luar negeri) dan 4 orang mengikuti program MSc. di UPM.

Seramai 10 orang pelajar mengikuti Ijazah Lanjutan di JPMV (7 Ph.D. dan 3 M.Sc.).

Pemeriksa Luar

1. Prof. N. T. Gorman telah bertugas di Jabatan ini.

2. Prof. D.L. Dungworth daripada University of California, U.S.A.

PENYELIDIKAN

1. Dr. Aziz Saharee: Studies on haemorrhagic septicaemia in cattle and buffaloes.

2. Dr. Aziz Saharee: Causes of mortality in young ruminants.

3. Dr. Bashir Ahmad: Anhydrosis in horses.

4. Dr. Bashir Ahmad: Management and diseases in horses.

5. Dr. Bashir Ahmad: Radiographic survey of fetlock joint in working polo ponies.

6. Dr. Fatimah Iskandar: Studies on neonatal diarrhoea in ruminants.

7. Dr. Fatimah Iskandar: Diseases of sheep.

8. Dr. Gurmeet Kaur Dhaliwal: Retrospective study of case records on post-operative complication in ovariohysterectomised cats and dogs.

9. Dr. Henry Too: Neonatal Calf Diarrhoea.

10. Prof. M.R. Jainudeen: Diagnostic ultrasound for pregnancy diagnosis.
11. Prof. M.R. Jainudeen: Embryo transfer in goats and buffalo.
12. Dr. Kalthum Hashim: Masalah pen-gurusan dan kesihatan anjing dan kuda.
13. Dr. Nadzariah Cheng: Studies on the cat liver fluke *Platynosomum fastosum*.
14. Dr. Nadzri Salim: Epidemiological modelling of haemorrhagic septicaemia in cattle and buffaloes.
15. Dr. Nadzri Salim: Epidemiological modelling of Newcastle Disease in poultry flocks.
16. Dr. Nadzri Salim: Studies on disease and mortality in goats and sheep in the Hulu Langat District.
17. Abdul Latif Ibrahim: Vaccination of vil-lage chickens in Malaysia against Newcastle dis-ease. Supported by a grant from the Australian Center for International Agriculture Research.
18. Abdul Latif Ibrahim: Application of Genetic engineering in animal health and Production IRPA.
19. Abdul Latif Ibrahim: Animal Biotech-nology (MPKSN).
20. Abdul Rani Bahaman: Epidemiology of leptospiral infection in Domestic Animals in Malaysia.
21. Abdul Rani Bahaman: The Sero-Epidemiological studies of Brucellosis in Cattle and Buffaloes in Malaysia.
22. Abdul Rani Bahaman: Detection of the Immunogenic Components of *Pasteurella mul-tocida* and *P. haemolytica*.
23. Awang I.P.R.: Biologi molekul virus berkepentingan veterinar.
24. Awang I.P.R.: The role of paramyxoviruses in mixed infections of respiratory diseases in poultry.
25. Awang I.P.R.: Characterization of avian paramyxovirus.
26. Mohd. Shah Abdul Majid: Studies on mycoplasma infections in chickens.
27. Mohd. Zamri-Saad: Aetiological Studies on pneumonia of sheep and goats.
28. Mohd. Zamri-Saad: Contagious ecthyma of sheep and goats.
29. Mohd. Zamri-Saad: Studies on sarcoptic mange of goats.
30. Mohd. Hair Bejo: Chronic Copper Toxicity in Palm Kernel Cake (PKC) loaded sheep.
31. Rasedee Abdullah: The effect of nephrotic syndrome on blood coagulation as-sociated mechanisms.
32. Rehana A. Sani: Bionomics of the free-living stages of trichostrongyles.
33. Rehana A. Sani: Anthelmintic resistance in small ruminants.
34. Rehana A. Sani: Trypanosomiasis in large ruminants.
35. Rehana A. Sani: Goat health and hus-bandary.
36. Saleha, A.A.: Psychrotrophic bacteria in raw and pasteurized milk.
37. Shaik Mohd. Amin Hj. Babjee: Survey of Parasites of aviary birds.
38. Shaik Mohd. Amin Hj. Babjee: Be-haviour of the red jungle fowl.
39. Shaik Mohd. Amin Hj. Babjee: Tick Resistance: Studies of tick lesions in the skin of Kedah-Kelantan cattle.
40. Sheikh-Omar, A.A.: Etiologic studies of Pneumonia in sheep & goats.
41. Ungku Chulan U. Mohsin: Diagnoses of poultry disease of livestock using im-munoperoxidase staining technique.
42. Dr. Abdul Salam Abdullah: Signal grass (*Brachiaria decumbens*) Toxicity in Sheep.
43. Dr. Abdul Salam Abdullah: Increasing Livestock Productivity Through Nutritional Im-provement.
44. Dr. Mohamed Ali Rajion: Nutritional and Immunological status of neonatal sheep/*Brachiaria decumbens* toxicity in sheep.
45. Dr. Tengku Azmi Tengku Ibrahim: Semen quality and reproductive functions of the Malin, Long Tail and Poll Dorset cross rams.
46. Dr. Tengku Azmi Tengku Ibrahim: Studies on the acromosomes of long tail rams in relation to its spermatozoa abnormality.
47. Dr. Kuan King Kai: Nutritive value and free choice intake of local forages in goats.
48. Puan Ramlah Hamid: Feeding systems-Development of feeding systems for poultry under various management systems.
49. Puan Ramlah Hamid: Development of feed resources.

50. Dr. Hew Peng Yew: Performance of temperate rabbits under Malaysian conditions.
51. Puan Ramlah Hamid: Genetics analysis and evaluation of indigenous ayam kampung.
52. Dr. Dahlan Ismail: Evaluation of rabbit breeds and production systems in the tropics. a) Cage systems and b) Grazing systems.
53. Dr. Dahlan Ismail: Modeling and simulation of Livestock - primary crops production systems.
54. Dr. Dahlan Ismail: Meat quality evaluation.
55. Dr. Mohd. Ridzwan Abd. Halim: Agronomic and Nutritive Evaluation of fodder Trees.
56. Encik Osman Awang: Feeding System-Increasing Productivity through Nutritional Improvement.
57. Dr. Tan Hock Seng: Reproductive performance of indigenous and crossbred cattle (IRPA Project).
58. Dr. Tan Hock Seng: Improving the reproductive efficiency of sheep (IRPA Project).
59. Dr. Wan Nordin Wan Mahmud: Semen evaluation of Australian rams (CMBL x breed) by using the electro-ejaculator and artificial vagina during various seasons of the year.
60. Dr. Wan Nordin Wan Mahmud: Monitoring the scrotal circumference of Australian rams (CMBL x breed) during various seasons of the year.
61. Dr. Ishak Yahaya: Sheep - Genotype - Nutritional Environmental Interaction.
62. Dr. Ishak Yahaya: Performance of Kedah-Kelantan body colour comparison.
63. Mohd. Peter Davis: Nutrition and reproduction of Australian Sheep in Malaysian Humid Tropics.
64. Dr. Kassim Hamid: Meningkatkan kecekapan biakbaka ruminan.

PENERBITAN

1. Aziz, S. and Salim, N. (1991). Epidemiology of Haemorrhagic Septicaemia in cattle and buffaloes in Malaysia. Paper presented at the 4th International Workshop on Haemorrhagic Septicaemia, 11-15 Februari, 1991, Kandy, Sri Lanka.
2. Bashir, A., N.B. Salim (1990). Radiographic survey of the leg extremities of polo ponies. Proc. Second Congress, Veterinary Association Malaysia, Kuala Lumpur, 6-10 October, 1990. p. 69-70.
3. Bashir, A. (1990). Clinical and radiographic examination of fetlock and pastern joints in normal working polo ponies. Jurnal Veterinar Malaysia (Diterima untuk terbitan).
4. Cheng, N.A.B.Y. (1990). Feline Leukemia Virus and Feline Immunosuppressive Virus in small animal practice. Proc. Second Congress, Veterinary Association Malaysia, Kuala Lumpur, 6-10 October, 1990. p. 66-68.
5. Cheng, N.A.B.Y. (1990). Sporothricosis - A practitioner perspective. Proc. Second Congress, Veterinary Association Malaysia, Kuala Lumpur, 6-10 October, 1990. p. 57-60.
6. Dhaliwal, G.K. (1990). Post-operative complications in ovariohysterectomised dogs and cats. Proc. Second Congress, Veterinary Association Malaysia, Kuala Lumpur, 6-10 October, 1990. pp. 63-65.
7. Jainudeen, M.R. (1990). A review of embryo transfer technology in the buffalo. Proc. Res. Coord. Mtg. "Domestic Buffalo Production in Asia". IAEA, Vienna.
8. Jainudeen, M.R. (1990). Maximising fertility of smallholder cattle. Paper presented at Commonwealth Veterinary Association Congress, 10-14 September, Harare, Zimbabwe.
9. Kalthum, W. and Waterman, E.A. (1990). The renal excretion of pethidine administered post-operatively to male dogs. Br. Vet. J. 146, 243-248.
10. Mahmood, Z., Ibrahim, A.L., Salim, N.B. (1990). Studies in the persistence of excretion of Newcastle Disease virus (NDV) from immunized chickens and its infectivity to susceptible chickens. Proceedings 39th Western Poultry Disease Conference, Sacramento, California, USA. p. 118.
11. Rosnina, Y., Jainudeen, M.R. and Nihayah, M (1991). Superovulation and egg recovery in goats in the tropics. Vet Rec. (accepted).
12. Too, H.L., Ko, S.W. and Mohna, S.S. (1990). Porcine atrophic rhinitis in Malaysia. Jurnal Veterinar Malaysia. (2) 1: 55-57.
13. Too, H.L., Jasni, S. and Sheikh-Omar, A.R. (1990). Porcine pleuropneumonia - a new epizootic. Proceedings of Second Congress, Veterinary Association Malaysia, Kuala Lumpur, Malaysia. October 6-10, 1990. 87-89.

14. Wahid, H.A., Jainudeen, M.R. and Nihayah, M. (1990). Development stage of oocytes in gonadotropin-treated calves. Proc. 2nd Congress Vet. Association Malaysia, Kuala Lumpur, 6-10 October, 1990.
15. Waterman, A.E. and Kalthum, W. (1989). The absorption and distribution of subcutaneously administered pethidine in the dog. J. Ass. Vet. Anaesth. 16: 51-52.
16. Waterman, A.E. and Kalthum, W. (1990). Pharmacokinetics of pethidine administered intramuscularly and intravenously to dogs over 10 years old. Res. Vet. Sci. 48: 245-248.
17. Waterman, A.E. and Kalthum, W. (1990). The effect of clinical hepatic disease on the distribution and elimination of pethidine administered post-operatively to dogs. J. Vet. Pharmacol. Therap. 13:137-147.
18. Zamri-Saad, M., Salmiyah, T.S., Jasni, S., Cheng, B.Y. and Basri, K. (1990). Feline sporotrichosis - an increasingly important zoonotic disease in Malaysia. Vet. Rec. 127:480.
19. Amin Babjee, S.M. Observations on the behaviour of the Malayan red jungle fowl (*Gallus Gallus Spadiceus*) Proceedings of the Second Congress Veterinary Association Malaysia, October 6-10, 1990 Kuala Lumpur, Malaysia.
20. Amin Babjee S.M., C.C. Lee, A.R. Sheikh Omar & S.S. Mohna (1991). Gastrointestinal parasites of local adult indigenous goats. Submitted to Jurnal Veterinar Malaysia. (Accepted)
21. Amin Babjee, S.M. (1990). Some observations on the Ecology and Behaviour of the Red Jungle Fowl (*Gallus gallus Spadecus*). Paper presented at Simposium Biologi Gunaan Malaysia Pertama. 27-28 Februari 1990. Universiti Pertanian Malaysia, Serdang.
22. Awang, I.P.R. and Russell, P.H. (November 1990). Turkey avian paramyxovirus type 3 infections in poultry. World's Poultry Science Journal, 46: 212-218.
23. Awang, I.P.R., Ibrahim H.M., Aini, I. and Ibrahim, A.L. (August, 1990). Isolation of Newcastle Disease Virus from Chestnut Munia (*Lonchura Malacca Jagori*). 13th Malaysian Microbiology Symposium Programme and Abstracts, Kuala Lumpur. pp. 24-25.
24. Awang, I.P.R., Rodiah-Husin and Kamaruddin A.I. (October, 1990). Diagnosis of Newcastle Disease using an indirect immunoperoxidase test. Proceedings of the Second Congress Veterinary Association Malaysia, pp. 149-150.
25. Awang, I.P.R. (1991). A master checklist of Veterinary and zoonotic viruses (Buku dalam percetakan oleh penerbitan Universiti Pertanian Malaysia).
26. Awang, I.P.R. (1991). Keluarga virus veterinar (Buku: dalam percetakan oleh Penerbitan Universiti Pertanian Malaysia).
27. Daud, I.A. R.A. Sani & R. A. Halim (1991). Gastrointestinal parasitism in goats. In Proceedings of the International Goat Seminar, 28-31 May, 1991, Thailand.
28. Hair-Bejo M., S. Haywood and J. Foster (1990). Gastrointestinal Response to High Dietary Copper in the rat. Abstract. In: The forty-first Annual Meeting of the American College of Veterinary Pathologists, December 9-14, 1990, Phoenix, Arizona, p. 201.
29. Hair-Bejo M., S. Haywood, M.E. Elmes, and J. Trafford (1990). Metallothionein induction and metal retention in gastrointestinal tract of copper loaded rat. Abstract. In: The forty-first annual meeting of the American college of Veterinary Pathologists, December 9-14, 1990, Phoenix, Arizona, p. 206.
30. Ibrahim, H.M., Awang, I.P.R. Alexander D.J., Manvell, R.J., Aini, I. and Ibrahim, A.L. (November 24, 1990). Isolations of Influenza A viruses from passerine birds in Malaysia. The Veterinary Record, 127:528.
31. Jasni, S., M. Zamri-Saad, Mutalib and A.R. Sheikh-Omar (1991). Isolation of *Pasteurella haemolytica* from the nasal cavity of goats. British Veterinary Journal Vol. 147.
32. Jasni, S., Zamri-Saad M., Mohamed, M., Kamal Hizata., Johari Jiken, A., Mutalib, A.R. and Sheikh-Omar, A.R. (1990). Prophylactic use of long acting oxytetra-cycline in ovine pneumonic pasteurellosis. Proceedings of the 2nd Congress of Veterinary Association Malaysia, October 6-10, 1990, Kuala Lumpur. pp. 100-101.
33. Lee C.C. & S.M. Amin-Babjee (1991). Lemdana sonneretta in the Malayan red jungle fowl (*Gallus gallus spadiceus*). Malaysian Applied Biology (accepted).
34. Lee C.C. & S.M. Amin-Babjee (1991). Parasites of the Malayan red jungle fowl (*Gallus gallus spadiceus*). Malaysia Applied Biology (submitted).
36. Lee, C.C., R.A. Sani & A.R. Sheikh-Omar (1990). Some parasites of rabbits observed during routine diagnostic procedures. Malays. Appl. Biology 19 (1) 101-102.
37. Mohd. Shah Majid (1991). An attempt to isolate avian mycoplasma from eggs of village chickens. (submitted for publication).

38. Sani, R.A., & C. Rajamanickam (1990). Gastrointestinal parasites in small ruminants. Invited paper in Proceedings of the Workshop on 'Integrated Tree Cropping and Small Ruminant Production Systems', 10-14 September, 1990, Medan, Indonesia.
39. Saleha A.A., Liver Fluke Dispose (Fascioliosis). Its Epidemiology, Economic Impact and Public Health Significance (in press).
40. Too, H.L., Jasni, S. and Sheikh-Omar, A.R. (1990). Porcine pleuropneumonia - a new epizootic. Proceedings of the 2nd Congress of Veterinary Association Malaysia, October 6-10, 1990 Kuala Lumpur. pp. 87-89.
41. Zainal-Zahari, Z., Sheikh-Omar, A.R. and Mustaffa, A.R. (1990). Capture myopathy in a sero (Caprivorinis sumatransis) Proceedings of the 2nd Congress of Veterinary Association Malaysia, October 6-10, 1990 Kuala Lumpur. pp. 111-112.
42. Zamri-Saad, M., S. Jasni, A.B. Nurida, A.R. Bahaman, A.R. Sheikh-Omar (1991). Antimicrobial sensitivity pattern of *Pasteurella haemolytica* isolated from respiratory tract of sheep and goats (submitted for publication).
43. Zamri-Saad, M., A.B. Nurida and A.R. Sheikh-Omar (1991). Experimental respiratory infection of dexamethasone treated goats with *Pasteurella haemolytica* A2 (submitted for publication).
44. Zamri-Saad, M., A. Azri, A. Zulkifli, A.B. Nurida, A.R. Sheikh-Omar (1991). Experimental respiratory infection of goats with *Mycoplasma arginini* followed by *Pasteurella haemolytica* A2 (submitted for publication).
45. Azmi, T.I., Vidyadaran, M.K. and Ishak, Y. (1990). Advances in crossbreeding the swamp, river buffaloes for draught. In International Workshop on draught power in swamp buffalo 11-14 July 1990, Bangkok.
46. Vidyadaran, M.K., Rahim, A.S. Vellaya, S., Ann, P.K., Huwazi, A.L. and Richard, X.M. (1991). A study of eleven deer farms, zoo and parks in Malaysia. *Journal Veterinar Malaysia* (in press).
47. Vidyadaran, M.K., King, A.S. and Kasim, H. (1990). "Quantitative observations on the pulmonary anatomy of the domestic Muscovy duck (*Carina Moschata*) *J. Zoo*, London 224.
48. King, A.S., Vidyadaran, M.K. and Kasim, H. (1991). "Quantitative pulmonary anatomy of a ground dwelling bird, the white breasted water hen (*Amaurornis phoenicurus*). *J. Zoo*, London (submitted for publication).
49. Ishak, Y., Vidyadaran, M.K. and Sinang, B. (1991). An evaluation of two deer farms in Malaysia. In proceedings Recent innovations in the animal and animal products industry. p. 213-216.
50. Richard, X.M., Zainal Zahari, Z., Vidyadaran, M.K. and Mohd. Tajuddin, A. (1990). Some aspects on the behaviour of a Sumatran rhinoceros (*Dicerorhinus sumatrensis*). In proceedings Animal Industry vision in the 90's through technology. Oct 6-10, Kuala Lumpur.
51. Zainal Zahari, Z., Vidyadaran, M.K., Mohd. Tajuddin, A., Rozyati, T.H., and Peng, B.T. (1990). Observations on the skeleton of the Sumatran rhinoceros. *Jurnal Veterinar Malaysia* 2(1): 59-62.
52. Davis, M.P. and Rajion, M.A. (1990). Acclimatisation of Australian sheep to the humid tropics. *Proc. 13th Malaysian society of Anim. Prod. Ann. Conf.* March 6-8, 1990, Malacca, Malaysia, p. 275-278.
53. Jelani, Z.A. And Rajion, M.A. (1990). Utilization of palm kernel cake as feed for ruminants. The FAO/IAEA Second Research Coordination Meeting on "Development of feeding strategies for improving ruminant productivity in areas of fluctuating nutrient supply through the use of nuclear and related techniques". Khon Kaen University, Khon Khaen, Thailand. October 22-26, 1990. 11 pp.
54. Salam Abdullah, A. and Rajion, M.A. (1990). Signal Grass (*Brachiaria decumbens*) Toxicity in Sheep: Changes in Rumen Microbial Population and Level of Volatile Fatty Acids. *Veterinary and Human Toxicology* 32, 444-445.
55. Salam Abdullah, A., and Rajion, M.A. (1990). Signal grass (*Brachiaria decumbens*) - Nutritive but poisonous to sheep. *Malaysian Agric. Digest* 8: 12-15.
56. Salam Abdullah, A. Noordin, M.M. and Rajion, M.A. (1990). Induced *Brachiaria decumbens* Toxicity in Rats. *Journal Malaysian Applied Biology* (in press).
57. Salam Abdullah, A., Rajion, M.A. Zamri-Saad, M. and Ishak Yahaya (1990). Variability in Response to *Brachiaria decumbens* poisoning in sheep. *Proc. 2nd Congress Vet. Assoc. Malaysia*, Oct. 6-10, 1990 Kuala Lumpur, Malaysia, p. 93-95.
58. A. Salam Abdullah, M.A. Rajion, Zamri-Saad and Ishak Yahaya (1990). Individual Variation in Resistance to *Brachiaria decumbens* Toxicity in Sheep. *J. Vet. Malaysia* (in press).
58. A. Salam Abdullah, Nordin Lajis, W. Mustapha and M.A. Rajion (1990). Identifica-

tion of Toxic Compounds in the rumen content of *Brachiaria decumbens* intoxicated sheep. Veterinary and Human Toxicology (submitted for publication).

59. A. Salam Abdullah, A. Rahman Omar and M.A. Rajion (1991). Antibiotic Residue in Local Milk. *J. Vet. Malaysia* (submitted for publication).

60. Azmi, T.I., Vidyadaran, M.K. and Azhar, M.N. (1990). Spermatocytes and spermatids in the semen of crossbred buffaloes - an ultrastructural study. *Proc. 2nd Congress Vet. Assoc. Malaysian Animal Industry. Vision in the 90s Through Technology.* Oct 6-10, 1990, Kuala Lumpur. pp 133-136.

61. Andrew Alek Tuen and Kuan King Kai (1990). Preference and Nutritive Value of Local Forages for Goats. *Proc. of 13th Malaysian Society of Animal Production annual Conf.* March 6-8 Melaka.

62. Kuan King Kai, Adnan Sulong and Ramlah Hamid (1990). Effect of Increasing Stocking Density on Performance and Heterophil Lymphocyte Ratios in Broilers. *Pertanika* 13(2), 171-175.

63. Dahlan, I. (1990). Pengendalian karkas dan mutu daging. Buku "Peternakan secara fidlot" DBP.

64. Ridzwan, A. Halim (1990). Developing Feed Resources for Ruminant Production. Options (Surat berita Pusat Kajian Dasar Pertanian, UPM) 5(1): 4-6.

65. Halim, R.A., D.R. Buxton, M.J. Hattendorf and R.E. Carlson (1990). Crop water stress index and forage quality relationships in alfalfa. *Agron. J.* 82-906-909.

66. Muhamad Awang, Ridzwan Halim, dan Misri Kusnan (1990). Kesan Penambahan Karbo Dioksida Terhadap Tanaman Pertanian (abstrak). *Berita Penyelidikan Bil.* 4(3): 4-5.

67. Tan, H.S., Ismaya, K.H. and Sulong, A. (1990). Endocrine evaluation of puberty and post-partum ovarian function in indigenous and imported Brahman cattle. In: *Studies on the Reproductive Efficiency of Cattle Using Radioimmunoassay Techniques.* International Atomic Energy Agency, Vienna, Austria. p. 99-114.

68. Tan H.S., Kassim, H., Adnan, S. and Termini, G. (1990). Effect of palm kernel cake on puberty and conception rate in indigenous cat-

tle. *Proc. 5th AAAP Anim. Sci. Congress, Taipei, Taiwan*, p. 283.

69. Lucy, M.C., Thatcher, W.W., Tan, H.S. and Drost, M. (1990). Effect of timing of prostaglandin injection subsequent to embryo collection of resumption of normal follicular development following superovulatory treatment in cattle. *Thriogenology*, 34: 7-19.

70. W. Nordin, M. Hilmi and T.A. Bongso (1990). Semen characteristics related to age in growing swamp buffalo (*Bubalus bubalis*). *Buffalo Journal* 2: 161-166.

71. Ishak, Y., M. Hilmi, M.a. Rajion and M. Krishnan (1991). Growth Performance of Malin Crossbred Sheep on Restricted Feeding - 14th MSAP Proceedings May 1991.

72. Ishak, Y., M.K. Vidyadaran and B. Sinang (1991). An evaluation of two deer farm. 14th MSAP Proceedings, May 1991.

73. Z.A. Jelani, Ishak, Y. and T. Yaakob (1991). Feedlotting of cattle based on palm kernel cake in smallholder farming. 14th MSAP Proceedings, May 1991.

74. A. Salam, M.A. Rajion and Ishak, Y. (1990). Variability in Response and *Brachiaria decumbens* Poisoning in Sheep. *Proceedings 2nd Congress Vet. Assoc.* 1990.

75. M.P. Davis and M.A. Rajion (1990). Acclimation of Australian sheep to the humid tropics. *Proc. Malaysian Soc. Animal Production 13th Annual Conference* (1990) 275-278.

76. M.P. Davis, M.A. Rajion and N. Adam (1991). High prenatal lamb mortalities in Australian ewes raised in the Malaysian humid tropics. *Proc. Malaysian Soc. Animal Production. 14th Annual Conference* (1991), 126-130.

77. Kassim, H. and N.H. Akma (1991). Field study of microbial status of breeder's eggs. *Proc. of 14th MSAP Ann. Conf.* 61-67.

78. Devendra Prasad Yadav and Mohamed Mahyuddin Dahan. Nutritive evaluation of sago fibre. Submitted and accepted for publication by *Asian-Australasian Journal of Animal Sciences*.

79. Devendra Prasad Yadav and Mohamed Mahyuddin Dahan. Performance of lamb fed urea-treated sago fibre based diet with supplements. Submitted and accepted for publication by *Asian-Australasian Journal of Animal Sciences*.

FAKULTI EKONOMI DAN PENGURUSAN

DEKAN

Dr. Mohd. Ariff Hussein

KAKITANGAN

Jumlah Kakitangan

JABATAN	KATEGORI A	KATEGORI B	KATEGORI C	KATEGORI D
Pejabat Dekan	3	3	9	11
Ekonomi Sumber Asli	14	-	1	2
Pengurusan dan Pemasaran	19	-	1	2
Perakaunan dan Kewangan	16	-	1	1
Ekonomi Pertanian	13	-	1	1
Ekonomi	17	-	1	2
Jumlah	82	3	14	19

Perlantikan Baru

Seorang Pensyarah kontrak, 2 orang tutor telah dilantik.

Perletakan Jawatan

Seorang pensyaran dan seorang Tutor telah meletak jawatan.

Cuti Belajar

Seramai 15 pensyarah sedang mengikuti kursus di dalam dan luar negeri (Ph.D - 12 orang, cuti sabatikal - 3 orang).

PERKARA AKADEMIK

Program Ijazah Lanjutan

Seramai 84 orang pelajar mengikuti program Ijazah Lanjutan, iaitu Ph.D. - 15 orang, Master Sains - 28 orang dan MBA - 41 orang.

Program Bachelor

Seramai 1014 orang pelajar telah mengikuti program Bachelo di Fakulti ini.

a) B.S. Perniagaantani : 471 orang

b) B.S. Ekonomi Sumber : 274 orang

c) Bachelor Perakaunan : 263 orang

Pemeriksa Luar

Seramai 4 orang pemeriksa luar telah bertugas di Fakulti, mereka ialah:

1. Prof. Werner Doppler dari University of Honhenheim, German Barat (B.S. Ekonomi Sumber).
2. Prof. D. Clerk dari University of New-castle, Australia (Bachelor Perakaunan).
3. Prof. James Marsden dari University of Kentucky, U.S.A. (B.S. Perniagaantani).
4. Prof. Lindsay, W. Daryl. dari University of Saskatchewan, Canada (Master Business Administration).

PENYELIDIKAN

1. Ahmad Shuib, Wan Sabri Wan Mansor, Zahid Emby dan Abdullah Ahmad : "Sustainable Development of Taman Negara - Its Socio-Cultural Economic Impacts on Local Residents, 1990.

2. Md. Zabid Abd. Rashid: "Strategic Planning in the Insurance Industry," Malaysian Insurance Institute, 1990.
3. Md. Zabid Abd. Rashid: "Ethical Values of Malaysian Managers," 1990.
4. Md. Zabid Abd. Rashid: "Job Satisfaction and Motivation of bank Officers", 1990.
5. Khalid Abd. Rahim: "Resource Linkages of Pollution Control" 1990.
6. Khalid Abd. Rahim: Environmental Regulation Impacts on Trade for Malaysian's Major Export Industries, 1990-1995.
7. Shamsheer Mohamad: "The Effect of Interim Earning Announcements on Stock Prices: A Test of Semi-Strong Form Efficiency with Appropriate Refirement, 1990.
8. Annuar Md. Nasir: "Efficient Market Hypothesis and the Thinly Traded Kuala Lumpur Stock Exchange : Tests with Appropriate Refinements," 1990.
9. Chew Teck Ann: "Farm Management Study of Rubber Estates," 1990.
7. Chew Tek Ann. "Share Contracts in Malaysian Rubber Smallholdings" Land Economics, Vol 87, No. 1 Feb., 1991 pp. 85-98.
8. Shamsudin, M.N., Hussein, M.A. "Sources of Growth and Productivity Improvement in Malaysian Agriculture". Paper presented at the 7th. World Productivity Congress, K.L., November 19-22, 1990.
9. Annuar Md. Nassir dan Shamsheer Mohamad. "Resistance by Target Firms Management in Unsolicited Takeovers : Bankers Journal Malaysia, Dec. 1990.
10. Shamsheer Mohamad, Dr. Ariff Mohamed dan Annuar Md. Nasir,. "Technical Analysis, Unit Root and Weak-form Efficiency of the KLSE", Bankers Journal Malaysia, April 1991.
11. Shamsheer Mohamad, Dr. Arif Mohamed dan Annuar Md. Nasir. "Technical Analysis Revisited" Investors Digest, April 1991.
12. Shamsheer Mohamad dan Annuar Md. Nasir. "Means of Rajment and Bidding Firms Stock Returns in the UK : A Test of Information Hypothesis" PERTANIKA 14(1) 1991.
13. Zabid, A.R.M., Samsinar M.S., Badriyah M., dan Mansor M.I. Towards More Effective Planning in Small Firms, Long Range Planning, 1990.

PENERBITAN

1. Ahmad Shuib, Nik Mustapha R. Abdullah dan M.Maya. "Persepsi Pelancongan Terhadap Pembangunan Industri Pelancongan di Tioman" JESA Staff Paper 2/90.
2. Ahmad Shuib, Nik Mustapha R. Abdullah & Faridah Hatim. "Attitudes of Residents Towards Tourism Development in Tioman", JESA Staff Paper No. 3/90.
3. Abd. Aziz Abd. Rahman, Ahmad Shuib, Shahwahid Hj. Othman dan Zakariah Rashid. "The Economic Impact of Tourism in Malaysia", presented at The Symposium on Tourism in Asian Region Nov, 1990.
4. Abd. Aziz Abd. Rahman, Ahmad Shuib, Shahwahid Hj. Othman dan Zakariah Rashid. "The Impact of Tourism on Malaysian Economy", presented at The National Seminar on The Services Industry in the 1990's, July, 1990.
5. Khalid Abd. Rahim. "Transcendental Policy Effects : Trade and Resource Issues of Environmental Regulation", Option, Vol. 5 No. 2, 1990.
6. Khalid Abd. Rahim. "Internalisation of Externalities : Who Bears The Cost of Pollution Control? The Environmentalist, Vol II, No. 1, 1991.
14. Md Zabid Abdul Rashid. Managerial Goals in State-Owned Enterprises in Malaysia, Jurnal INTAN, National Institute of Public Administration, 1990.
15. Zabid A.R.M., Samsinar M.S., Mansor M.I. Farmers Buying Selection Criteria of Agricultural Inputs, Journal of International Food and Agribusiness Marketing, 1990.
16. Md. Zabid Abdul Rashid, Juradah Abu Bakar dan Rahim Abdullah. Job Satisfaction and motivation among Bank Officers, Banker's Journal Malaysia, October, 1990.
17. Zabid, A.R.M., S. Kamaruddin, O. Maizon, and R.A. Ghaffar. Strategic Planning in the Malaysian Insurance Industry, The Geneva Papers on Risk and Insurance - Issues and Practice (Forthcoming).
18. Md Zabid Abdul Rashid and Iskandar Abdullah. Managers' Perceptions of Unethical Practices in Malaysia, Proceedings Pan Pacific Conference VII, Seoul, May 1990.
19. Md Zabid Abdul Rashid and Iskandar Abdullah. Ethical Perceptions of Malaysian Managers, International Academy of Management and Marketing Proceedings 1991, Detroit, U.S.A., April 1991.

20. Md Zabid Abdul Rashid and Iskandar Abdullah. Attitudes of Malaysian Managers Towards Social Responsibility, Proceedings Pan Pacific Conference VIII, Kuala Lumpur, 1991.

21. Md Zabid Abdul Rashid and Syed Kadir Alsagoff. Perceived Ethical Values of Malaysian Managers, Proceedings Pan Pacific Conference VIII, Kuala Lumpur, 1991.

22. Md Zabid Abdul Rashid and Md Pishal Abdul Raub. Job Satisfaction and Motivation of Insurance Employees in Malaysia, Proceedings Pan Pacific Conference VIII, Kuala Lumpur, 1991.

23. Md Zabid Abdul Rashid, Samsinar Md Sidin and Mohd Mansor Ismail. Buyer Selection Criteria of Agricultural Inputs, Staff Paper No. 2, January 1990, Department of Management and Marketing, Universiti Pertanian Malaysia.

24. Samsinar Md Sidin, Md. Zabid Abdul Rashid dan Mohd Mansor Ismail. Proses Pemilihan Input Pertanian: Satu Pendekatan

Gelagat Pengguna, Staff Paper No. 3, February 1990, Department of Management and Marketing, Universiti Pertanian Malaysia.

25. Md Zabid Abdul Rashid, Juradah Abu Bakar dan Rahim Abdullah. Job Satisfaction and Motivation Among Bank Managers, Staff Paper No. 4, March 1990, Department of Management and Marketing, Universiti Pertanian Malaysia.

26. Md Zabid Abdul Rashid. Perancangan Strategi Perniagaan Kecil (Strategic Planning for Small Business), Usahawan, October 1990.

27. Md Zabid Abdul Rashid, Zainal Abidin Mohamed dan Samsinar Md Sidin. Marketing Practices in Small Business in Malaysia: Reference to the Food Sector, International Conference on Small and Medium Scale Enterprises, Universiti Utara Malaysia, Langkawi, May 1990.

28. Shamsudin, M.N., Hussein, M.A. 'Sources of Growth and Productivity Improvement in Malaysian Agriculture'. Paper presented at the 7th. World Productivity Congress, Kuala Lumpur, November 19-22, 1990.

FAKULTI PENGAJIAN PENDIDIKAN

DEKAN

Prof. Madya. Mohd Shah Hj. Lassim Dip.
Agric (Malaya), B.S., M.S. (Louisiana State).

KAKITANGAN

Jumlah Kakitangan

JABATAN	KATEGORI			
	A	B	C	D
Pejabat Dekan	1	-	10	11
Jabatan Pendidikan	61	3	8	10
Jabatan Bahasa	62	3	7	7
Jabatan Sains Kemasyarakatan	17	-	1	4
JUMLAH	141	6	26	32
JUMLAH BESAR				205

Perlantikan Baru

6 orang Pensyarah, 8 orang Guru Bahasa, seorang Tutor, seorang Penolong Pegawai Persediaan Makanan, seorang Penolong Pegawai Seni Reka dan seorang Pembantu Am Rendah.

Perletakan Jawatan

Seorang Tutor telah meletakkan jawatannya di Fakulti Pengajian Pendidikan pada 13 Februari, 1991.

Cuti Belajar

Seramai 19 pensyarah sedang mengikuti kursus di dalam dan luar negeri (16 orang Ph.D. dan 3 orang Master).

PERKARA AKADEMIK

Ijazah Lanjutan 76 orang pelajar Ijazah Lanjutan sedang mengikuti pengajiannya sehingga Semester Disember 1990/91. Mereka adalah terdiri daripada 67 orang mengikuti program Master Sains dan 9 orang mengikuti program Ph.D.

Pemeriksa Luar

Seorang Pemeriksa Luar bertugas di Jabatan Bahasa. Beliau ialah Professor Roderick A. Jacobs dari University of Hawaii at Manoa (bagi program Bachelor Pendidikan (TESL)).

PENYELIDIKAN

1. Halimah Hassan: Etika Melayu dalam Historiografi Melayu- Pemikiran dalam Misa Melayu.

2. Jayakaran Mukundan: Pembinaan Fail Guru (Projek Kementerian Pendidikan). (Tales and Legends of Asean Countries).

3. Dr. Ghazali Basri: Persepsi Rakyat Sarawak terhadap Program Pembangunan; tajaan UPM Sarawak. (Ahli Pasukan Penyelidik).

4. Dr. Ghazali Basri: Perubahan Fahaman Keagamaan di kalangan masyarakat India di Malaysia - Satu kajian kes di Banting, Selangor. (Ketua Penyelidikan).

5. Dr. Abd. Halin Hamid: Persepsi Rakyat Sarawak Terhadap Program Pembangunan (Ahli Pasukan).

6. Dr. Abd. Halin Hamid: Organisasi Semula Sistem Pengeluaran Pertanian - Satu Penilaian Terhadap Estet Mini di Semenanjung Malaysia (Ahli Pasukan).

7. Dr. Abd. Halin Hamid: Pola Penggunaan Perkhidmatan Kesihatan Ibu dan kanak-kanak di luar bandar Semenanjung Malaysia (Ahli Pasukan).

8. Dr. Abd. Halin Hamid: Beberapa Aspek Sosio-ekonomi. Peternakan Lebah Madu di Malaysia (Ahli Pasukan).

9. Dr. Nazaruddin Hj. Mohd. Jali: Kajian Organisasi Semula Sistem Pengeluaran Pertanian - Satu Penilaian Terhadap Estet Mini (Biaya MPKSN).

10. Dr. Nazaruddin Hj. Mohd. Jali: Kajian Sosio-ekonomi Masyarakat Setinggan di Kawasan Lembah Kelang (Biaya Kerajaan Selangor).

11. Zahid Emby: Persepsi Rakyat Sarawak Terhadap Program Pembangunan; (Ahli Pasukan Penyelidik); UPM (Sarawak).

12. Zahid Emby: Sustainable Development of Taman Negara - Its Impact on the Local Population; Japan Wildlife Research Centre. (Ahli Pasukan Penyelidik).

13. Zahid Emby: Organisasi Sistem Pengeluaran Pertanian- Satu Penilaian Terhadap Estet Mini di Semenanjung Malaysia, IRPA. (Ketua Pasukan Penyelidik).

14. Encik Mazlan Yong: Believe About Heart Disease Risk Among Students at UPM.

15. Dr. Naim Haji Ahmad: Penulisan-penulisan ilmiah dalam bidang Teknologi Pendidikan Yang terdapat di LTM dan Maktab-Maktab Perguruan di Malaysia.

16. Dr. Noran Fauziah Yaakub: Some Correlates of Performance - A Production Function approach.

17. Dr. Gan Siowck Lee: Needs Analysis - Preparing Computer- Using Educators for Malaysian Schools.

18. Encik Mokhtar Haji Nawawi: Kajian Kesedaran Alam Sekitar di Kalangan Guru-guru Pelatih, di Fakulti Pengajian Pendidikan, UPM.

19. Dr. Mohd. Ibrahim Nazri: Kajian Keberkesanan Latihan Kerja Ladang di UPM.

PENERBITAN

1. Dr. Amat Juhari Moain. 1990. **Kepercayaan Orang Melayu Berhubung dengan Pertanian**, Kuala Lumpur . DBP.

2. Dr. Amat Juhari Moain. 1990. 'Kata Pengantar', dalam **Perkembangan Tulisan Jawi Dalam Masyarakat Melayu**, oleh Kang Kyoung Seuck. Kuala Lumpur. DBP (m.s. XIX-XLI).

3. Dr. Amat Juhari Moain. 1990. 'Dialek Melayu', dalam **Dewan Budaya**, Jilid 12, Bil. 11, November 1990. m.s. 50-57.

4. Dr. Amat Juhari Moain. 1990. 'Ejaan dan Sistem Ejaan Jawi', dalam **Dewan Budaya**, Jilid 12, Disember, 1990. m.s. 73-74.

5. Dr. Amat Juhari Moain. 1990. Pengkatalogan Karya-karya. Tulisan Jawi - Beberapa Transliterasi Jawi-rumi', kertas

kerja dalam **Seminar Serantau Pendokumentasian Bahasa dan Kesusasteraan Melayu**, oleh Idros Samsuddin dan rohani rustam (ed.), pada 4-7 Jun 1990 di Kuala Lumpur. DBP.

6. Dr. Amat Juhari Moain. 1990. 'Bahasa dan Peristilahan', kertas kerja dalam **Kursus Bahasa dan Penulisan Profesional**, anjuran Persatuan Linguistik Malaysia dan MARDI pada 25-29 Jun 1990.

7. Dr. Amat Juhari Moain. 1990. 'Penghayatan kepada Sunnah Nabi S.A.W.', kertas kerja dalam **Ceramah Maulidur-Rasul** pada 20 September 1990 di Masjid Jamek Seri Ladang, Batu Pahat, Johor.

8. Dr. Amat Juhari Moain. 1990. 'Kaedah ejaan Jawi Moden', kertas kerja dalam **Persidangan Perancangan Peristilahan Antarabangsa Termplan '90** pada 20-22 November 1990 di Kuala Lumpur, anjuran DBP/MAS/Infoterm.

9. Dr. Amat Juhari Moain. 1990. 'Perkaedahan Pengajaran Jawi Sebagai Strategi Pengayaan Bahasa', kertas kerja dalam **Konvensyen Bahasa Malaysia Khusus di Institusi Pengajian Tinggi** peringkat kebangsaan pada 18-19 Dis. 1990 di Kuala Lumpur.

10. Dr. Amat Juhari Moain. 1990. 'Kesilapan-kesilapan Umum Bahasa Yang Sering Dilakukan oleh Penutur-penutur Bahasa Malaysia', kertas kerja dalam **Ceramah Bahasa** pada 22 Januari 1991 di Maktab Perguruan Ilmu Khas, Kuala Lumpur.

11. Dr. Jamali Ismail & Sharon Goh Seng Pang. 1990. 'Error Analysis and the Process Approach to Writing', kertas kerja dalam **Seminar on the Process Approach to the Teaching of Writing**, 14-16 Jun 1990 di UPM.

12. Dr. Jamali Ismail. 1990. 'Competence, Attitudes and Motivation in Language Learning with Special Reference to Malay Learners of ESL', kertas kerja dalam **Bengkel Pragmatic Communicative Language Teaching Methodology** pada 4-5 Julai 1990 di ITM, Shah alam.

13. Dr. Jamali Ismail. 1991. 'Learning English in a Non-Supportive Environment - The Problem in Malaysian Schools', kertas kerja dalam **Persidangan Antarabangsa Teaching & Learning English in Challenging Situations** pada 14-16 Mei 1991 di Petaling Jaya.

14. Malachi Edwin & Fauziah Hassan. 1990. 'Using Computers to Teach Writing', kertas kerja dalam **Seminar/Workshop on the Process Approach to the Teaching of Writing**, pada 14-16 1990 di UPM.
15. Malachi Edwin. 1990. 'A Comparative Study of the Achievement and the Proficiency Levels in English as a Second Language among Learners in Selected rural & Urban Schools in Peninsular Malaysia', **The English Teacher**, Vol. XIX, Julai 1990.
16. Malachi Edwin. 1990. 'The Role of the Language laboratory in the Teaching of the English Language', kertas kerja dalam **The Fourth National Seminar on TESL**, pada 5-7 Ogos 1990 di S.M. Kuen Cheng, Kuala Lumpur.
17. Malachi Edwin. 1990. 'Preparing Materials for Use in the Language Laboratory', kertas kerja dalam **Kursus Pengurusan dan Penyelenggaraan Makmal Bahasa** pada 3-7 Disember 1990 di UPM.
18. Malachi Edwin. 1990. 'Theoretical Framework for Listening and Speaking Activities in the Language Laboratory', kertas kerja dalam **Kursus Pengurusan dan Penyelenggaraan Makmal Bahasa** pada 3-7 Disember 1990 di UPM.
19. Malachi Edwin. 1991. 'The Teaching of Literature in English in Malaysian Schools', kertas kerja dalam **6th Oxford Conference on Literature Teaching Overseas**, pada 7-13 April 1991 di Oxford, England.
20. Malachi Edwin. 1991. 'Developing Listening Skills in the KBSR English Language Programme: A Collaborative Effort', kertas kerja dalam **Seminar Peningkatan Pengajar dan Pembelajaran Bahasa Inggeris di Sekolah-sekolah Daerah Hulu Langat**, pada 4 Mei 1991 di UPM.
21. Malachi Edwin. 1991. 'Self-Exploration in the Literature Classroom', kertas kerja dalam **Persidangan Antarabangsa: Teaching and Learning English in Challenging Situations**, 14-17 Mei 1991 di Petaling Jaya.
22. Theresa Heng Sooi Chew. 1990. 'The Process-Oriented Approach to the Teaching of Writing in ESL', kertas kerja dalam **Seminar on the Process Approach to the Teaching of Writing**, 14-16 Jun 1990 di UPM.
23. Theresa Heng Sooi Chew. 1991. 'Grammar and the Process Approach in the Malaysian Classroom', kertas kerja dalam **Persidangan Antarabangsa Teaching & Learning English in Challenging Situations**, 14-17 Mei 1991 di Petaling Jaya.
24. Chan Swee Heng. 1991. 'Evaluating Writing in the Process Approach', kertas kerja dalam **Seminar on the Process Approach to the Teaching of Writing**, 14-15 Jun 1990.
25. Sharifah Zainab Syed Abdul Rahman. 1990. 'an Overview of the Process Approach to Writing', kertas kerja dalam **Seminar on the Process Approach to the Teaching of Writing**, 14-15 Jun 1990.
26. Shameem Mohd Rafik Khan. 1990. 'Student-Centred Strategies for Writing: Techniques that Work', kertas kerja dalam **Seminar on the Process Approach to the Teaching of Writing**, 14-15 Jun 1990.
27. Mhd Amin Arshad. 1990. 'Merancang Kertas Kerja Program', kertas kerja dalam **Bengkel Kepimpinan dan Organisasi** pada 29 Julai 1990 di UPM.
28. Mhd Amin Arshad. 1990. 'Teknik Menjawab Kertas Bahasa Malaysia I STPM', kertas kerja dalam **Ceramah Peningkatan Pembelajaran STPM** pada 25 Ogos 1990 di SMKA Maahad Hamidiah Kajang.
29. Aripin Said. 1990. **Gasing Bertuah** (novel), siri KBSM Tg. I. Fajar Bakti Sdn. Bhd.
30. **Suara Piano Rumah Banglo** (novel). Pustaka Mastika.
31. Aripin Said. 1990. **Gasing Bertuah** (cerita rakyat). Pustaka Mastika.
32. Aripin Said. 1990. "Tokok dalam Cerita Rakyat", **Dewan Siswa**, DBP, Jun 190, m.s. 42-43.
33. Aripin Said. 1990. 'Sastera Klasik Penghibur Duka Lara', **Dewan Siswa**, DBP, Julai 1990, m.s. 42-43.
34. Aripin Said. 1990. 'Gurindam Puisi Melarat', **Dewan Siswa**, DBP, Ogos 1990, m.s. 42-43.
35. Aripin Said. 1990. 'Seloka Menyindir dan Mengejek', **Dewan Siswa**, DBP, September 1990, m.s. 42-43.
36. Aripin Said. 1990. 'Anugerah Budaya Pena', **Berita Harian**, 16 Ogos 1990, m.s. 12.
37. Aripin Said. 1990. 'Melayu Sri Lanka Warisi Pantun', **Berita Harian**, 23 Ogos 1991, m.s. 11.

38. Aripin Said. 1990. 'Brunei Berjaya Kumpul Manuskrip Melayu Lama', **Berita Harian**, 26 Ogos 1990, m.s. 12.
39. Aripin Said. 1990. 'Gurindam Raja Ali Haji Tetap Unggul', **Berita Harian**, 25 Oktober 1990, m.s. 11.
40. Aripin Said. 1990. 'Sastera Klasik: Cerita Asal Usul Tidak Mengira Soal Logik', **Dewan Siswa (DBP)**, November 1990, m.s. 42-43.
41. Aripin Said. 1990. 'Bahasa Melayu di Singapura', **Berita Bahasa (DBP)**, November 1990, m.s. 40-41.
42. Aripin Said. 1990. 'Sastera Klasik: Cerita Binatang Menasihati Raja?' **Dewan Siswa (DBP)**, Oktober 1990, m.s. 48-49.
43. Ismail Jusoh. 1990. 'Perkembangan Linguistik', **Mastika**, Jun 1990, m.s. 52-53.
44. Ismail Jusoh. 1990. 'Bahasa, komunikasi & kebudayaan', **Jurnal DBP**, Julai 1990, m.s. 535-543.
45. Che Ah Abdul Ghani. 1990. **Bagaimana Menjadi Pengurus Yang Berjaya** (Terjemahan). Dewan Bahasa dan Pustaka.
46. Nora Mohd Nor. 1991. **KBSM English Form Four**. Mutiara Ilmu Sdn. Bhd.
47. Tan Bee Hon. 1990. 'Computer-Assisted Language Learning Issues and Trends', (MCCE Bulletin). **New Straits Times**, 20 September 1990, m.s. 13.
48. Yazariah Yacob. 1990. **Modul Kemahiran Berkomunikasi** (Edisi Pelajar). Pasukan Program Kemahiran Berkomunikasi UPM.
49. Taha Abd Kadir. 1990. 'Penggunaan Bahan Drama Dalam Pembelajaran-Pembelajaran Bahasa/Kesasteraan Melayu', kertas kerja dalam **Seminar Kebangsaan Kesusasteraan Dalam Pendidikan Bahasa Malaysia** pada 6-7 Oktober 1990 di Institut Bahasa.
50. Taha Abd Kadir. 1991. **Monograf Pusako Yusof Arshad**. PEN. N. Sembilan.
51. 'Drama sebagai Bahan Pengajaran Bahasa Malaysia', kertas kerja dalam **Seminar Teater dalam Pendidikan**, 3-5 Mei 1991 di MPPM, Melaka.
52. Mhd Amin Arshad. 1990. 'Penggunaan Bahan Sastera (Prosa) dalam Pendidikan Bahasa Malaysia KBSR dan KBSM', kertas kerja dalam **Seminar Kebangsaan Kesusasteraan dalam Pendidikan Bahasa Malaysia** pada 6-7 Oktober 1990 di Institut Bahasa.
53. Arshad Abdul Samad. 1990. 'Pemilihan dan Pengubahsuaian Bahan untuk Makmal' dan 'Dimensi Baru dalam Penggunaan Makmal', kertas kerja untuk **Kursus Pengurusan dan Penyelenggaraan Makmal Bahasa** pada 3-7 Disember 1990 di UPM, Serdang.
54. Arshad Abdul Samad. 1991. **Supplementary Classroom English Language Teaching in Malaysia through Media Based Individualized Instruction**, kertas kerja dalam **International Seminar: Reflections on Classroom Practice**, pada 29-30 April 1991 di USM Pulau Pinang.
55. Arshad Abdul Samad. 1991. 'The Computer as a Tool: A Potpourri of ideas for the Uninitiated', kertas kerja dalam **Seminar Peningkatan Pengajaran dan Pembelajaran Bahasa Inggeris di Sekolah-sekolah Daerah Hulu Langat**, pada 4 Mei 1991 di UPM, Serdang.
56. Fauziah Hassan. 1991. 'Using Language Plus to Teach English as a Second Language', kertas kerja dalam **Seminar Peningkatan Pengajaran dan Pembelajaran Bahasa Inggeris di Sekolah-sekolah Rendah Daerah Hulu Langat** pada 4 Mei 1991 di UPM.
57. Fauziah Hassan. 1991. 'Ketrampilan Membaca dan Berfikir untuk Kecemerlangan Ilmu' dan 'Ke Arah Kecemerlangan Membaca', kertas kerja dalam **Kursus Pukal Kecemerlangan** pada 23 Mei 1991 di Sekolah Menengah Sains Raub, Pahang.
58. Jayakaran Mukundan. 1990. **Teaching File (King Solomon's Mines)**, Kementerian Pendidikan Malaysia.
59. Jayakaran Mukundan. 1991. 'Utilising an Advantaged Learning Environment to the fullest', kertas kerja dalam **Perisidangan Antarabangsa Teaching & Learning English in Challenging Situations**, pada 14-17 Mei 1991.
60. Mat Nor Hussin. 1991. 'Penggunaan Media Bahan Murah dalam Pendidikan Bahasa Malaysia', kertas kerja dalam **Seminar Bahasa dan Sastera dalam Pendidikan VII** pada 20-22 Mei 1991 di UKM, Bangi.

61. Mohd. Ibrahim Nazri. 1990. Professional knowledge competency achievement of agricultural teachers with and without preservice teacher preparation in Peninsula Malaysia. *Journal of Agricultural Education* 31 (2), 49-54.
62. Noran Fauziah Yaakub. 1990. Some Guidelines for the Environmental Education of Preservice Science Teachers in Malaysia. *WCCT Forum Vol. IV. No. 1 Jun 1990*.
63. Noran Fauziah Yaakub. 1990. Towards Improving School Based Courseware Writing. *MCCE Bulletin Vol. 6. No. 3*.
64. Noran Fauziah Yaakub. 1990. Slumblng Block to Academic Excellence. *Star* 22.7.90, Education.
65. Noran Fauziah Yaakub. 1990. 'Why They Choose Teaching: A Factor Analysis of Motives of Malaysian Teacher Trainees'. *Pertanika*.
66. Noran Fauziah Yaakub. 1990. 'A Multivariate Analysis of Attitude Towards Teaching. *Pertanika*.
67. Noran Fauziah Yaakub. 1990. 'Motives for Teaching Among University Students', *Suara Pendidik*.
68. Noran Fauziah Yaakub. 1990. 'Personality Trails, Motives for Teaching Performance', *Jurnal Pendidikan Guru m.s.* 16-30.
69. Noran Fauziah Yaakub dan Ahmad Mahdzan Ayob. 1990. *Guru dan Perguruan*, Dewan Bahasa dan Pustaka, Kuala Lumpur.
70. Mazlan Yong. 1990. Vitamin Use and Reliefs Among a Sample of Physical Education Students at a Malaysian University. *Journal of the Royal Society of Health*, Vol 110, No. 4. pg. 132-134.
71. Ramlah Hamzah dan Osborne, E.W. 1990. **Teachers' knowledge and attitude toward Problem Solving Teaching**. *Proceedings Seventeenth Annual National Agricultural Education Research Meeting*, Cincinnati, Ohio.
72. Ramlah Hamzah dan Osborne, E.W. 1990. **The Use of School Land Laboratories Among Agriculture Teachers in West Malaysia**. *Seventeenth Annual National Agricultural Education Research Meeting*, Cincinnati, Ohio.
73. Othman Mohamed. 1990. **Cross Cultural Perspectives in Counselling: Mental Health Conceptions in Malaysia**. (FRIC Documentation Reproduction Service No. ED 302 766).
74. Othman Mohamed. 1990. **Counselor's attitude and skills**. Pusat Latihan Kakitangan, Bank Negara Malaysia, Ogos 1990 di Kuala Lumpur.
75. Othman Mohamed. 1990. **An analysis of counseling supervision emphasis and judgements of supervisee satisfaction in the supervision relationship**, *Dissertation Abstracts International*, University Microfilms.
76. Aida Suraya Haji Md. Yunus. 1990. **Malaysia's Steps towards Enchantment in Mathematics**. Kertas kerja di Fifth South East Asian Conference on Mathematics Education, 14-17 Jun 1990 di Brunei Darussalam.
77. Abdul Rahman Md. Aroff, L.H. Chang dan Judy Ellis. 1990. **Pendidikan Moral Tingkatan 3 KBSM**. Kuala Lumpur: Dewan Bahasa dan Pustaka dan Kementerian Pendidikan Malaysia.
78. Abdul Rahman Md. Aroff dan Mohd. Ismail Ridzuan. 1990. **Kepimpinan Intruksi dan Penerapan Pengajaran di Sekolah**. Kertas kerja di Projek Latihan IV: Kepimpinan kurikulum Dalam KBSM, 5.10.90 di Strawberry Park, Cameron Highlands.
79. Abdul Rahman Md. Aroff dan Abd. Aziz Zakaria. 1990. **Penilaian Tentang Skim Pinjaman Buku Teks**. Kertas kerja di Seminar Kebangsaan Membincang Dapatan, Kajian-kajian Pendidikan Biayaan Bank Dunia, 24: 28.2.91 di Hotel Ramada Renaissance, Melaka.
80. Abdul Rahman Md. Aroff dan Chang Lee Hoon. 1990. **Penggunaan Buku Teks Pendidikan Moral Tingkatan III: Suatu Garis Panduan Untuk Guru**. Kertas kerja di Kursus Orientasi KBSM untuk kakitangan Sumber (Mata Pelajaran Teras). 8 Mei 1991 dan 20 Jun 1991 di Pusat Perkembangan kurikulum, KL.
81. Abdul Rahman Md. Aroff. 1990. **Possible Research Areas In Moral Education**. Kertas kerja di Seminar Siswazah Fakulti Pendidikan, UM, 15.12.90 di UM.
82. Abdul Rahman Md. Aroff. 1990. **Sejauh Manakah Penyerapan Nilai-Nilai**

Murni Merentasi Kurikulum Pengajian Tinggi? Kertas Kerja di Seminar Penerapan Nilai-Nilai Murni Dalam Pengajaran, 22-23.4.91 di UTM.

83. Abd. Patah Abd. Malek. 1990. 'An Engineer's in Education Society' A View From A Non Engineer', **Pendidikan Profesional**, No. 2.

84. Mohd. Majid Konting. 1990. Buku Kaedah Penyelidikan Pendidikan. Dewan Bahasa dan Pustaka.

85. Abd. Patah Abd. Malek. 1990. Pensyarah Sebagai Ilmuan. Kertas Kerja di Seminar, Jun 1990, ITM Arau, Perlis.

86. Abd. Patah Abd. Malek. 1990. Peranan Manusia Sebagai Khalifah Allah, kertas kerja di Seminar Pembangunan Insan, 18.7.90 di MARDI, Serdang.

87. Dr. Naim Haji Ahmad. 1990. Pembudayaan Teknologi Pendidikan Ke Arah Kecemerlangan: Antara Peranan dan Strategi Agen Perubahan. Kertas kerja di Seminar Pembudayaan Teknologi Pendidikan Wilayah Persekutuan, 12 Jun 1990 di Institut Aminuddin Baki, Genting Highlands.

88. Dr. Naim Haji Ahmad. 1990. Antara Isu dan Masalah Pusat Sumber Sekolah. Kertas Kerja di Bengkel Dalam Perkhidmatan Guru-Guru Daerah Kuala Selangor, 14 Jun 1990 di Pejabat Pendidikan Daerah Wilayah Persekutuan.

89. Dr. Naim Haji Ahmad. 1990. Kaedah dan Strategi Dalam Menyampaikan Dakwah. Kertas Kerja di Bengkel Kerohanian Zon Selatan, 30 Julai 1990 di Jabatan Pendidikan, Melaka.

90. Dr. Naim Haji Ahmad. 1990. Peranan dan Strategi Agen Perubahan Dalam Pembudayaan Teknologi Pendidikan. Kertas Kerja di Bengkel Kerohanian Zon Selatan, 30 Julai 1990 di Jabatan Pendidikan, Melaka.

91. Dr. Naim Haji Ahmad. 1990. DHP: Penggunaan dan Teknik Penyediaan. Kertas kerja Bengkel Penyampaian kuliah Berkesan Untuk Pensyarah-Pensyarah di Fakulti Perhutanan. 27 Jun 1990 di PPPL, UPM.

92. Dr. Gan Siowck. 1990. Using the Computers to Meet the Objectives of KBSM. Kertas kerja di National Science of Technology Week CIE Seminar, 23 Ogos di PWTC.

93. Dr. Gan Siowck. 1990. Needs Assessment in Curriculum & Educational Research. Kertas kerja Graduate Seminar Faculty of Education, 21 Julai 1990 di UM.

94. Dr. Gan Siowck. 1990. Menggunakan komputer Untuk memenuhi Objektif KBSM. Kertas kerja di Bengkel Penulisan Perisian Kursus Bahagian Sekolah, Kementerian Pendidikan Malaysia, 7 Sept. 1990 di Wisma Belia.

95. Dr. Ghazali Basri. 1990. **Christian Mission and Islamic Da'wah**, Nurin Enterprise Kuala Lumpur.

96. Dr. Ghazali Basri. "Di Sekitar Permasalahan Ilmu" Dalam Mohd. Idris Jusi. 1990. **Faham Ilmu, Pertumbuhan dan Implikasi**, Nurin Enterprise K.L. Hal. 1-31.

97. Dr. Ghazali Basri. "Moral dan Etika: Huraian Konsep dan Pemasalahan Dalam Konteks Perlaksanaan Nilai Murni di Sekolah-sekolah", **Jurnal Pendidikan Islam**, Jilid 3 Bil. 2 Ogos 1990. ABIM, Kuala Lumpur. Hal. 47-56.

98. Mohd. Majid Konting dan Abdul Halin Hamid. 1990. Tanggapan Pelajar Terhadap Minggu Suaikenal Universiti Pertanian Malaysia. Laporan Penyelidikan, Fakulti Pengajian Pendidikan.

99. Dr. Nazaruddin Hj. Mohd. Jali. 1990. The Javanese of Kuala Langat: Participation in Development Programmes dalam. V.T. King and M. Parnwell (Ed.) *Margins and Minorities. the Pheriperal Areas and Peoples of Malaysia*. Hull University Press, Hull.

100. Dr. Nazaruddin Hj. Mohd. Jali, Mohd. Majid Konting & Mohamad Hassan Abdul Rahman. 1990. Pola Penggunaan Perpustakaan oleh Pelajar-Pelajar di Universiti Pertanian Malaysia. Laporan Penyelidikan, FPP.

101. Dr. Ghazali Basri. 1990. "Reaksi Orang Kristian Terhadap Proses Islamisasi - Satu tinjauan Umum", kerana seminar untuk seminar, anjuran Institut Kajian Dasar Malaysia pada 2 Jun 1990, Fakulti Pengajian Pendidikan.

102. Dr. Ghazali Basri. 1990. "Penjajahan Pemikiran dan Kesannya Ke Atas Pembentukan Perinbadi dan Pengurusan", kertas kerja di Bengkel Kursus Pegawai, anjuran Dewan Bandaraya Kuala Lumpur pada 5 Jun 1990, Fakulti Pengajian Pendidikan.

103. Dr. Ghazali Basri. 1990. "Human Rights: Islamic Perspectives", Kertas kerja di forum Human Rights, anjuran Majlis Perundingan Malaysia Agama-Agama di Dewan Bandaraya pada 10 Disember 1990, Fakulti Pengajian Pendidikan.

104. Dr. Ghazali Basri. 1990. "Budaya Kepimpinan Pelajar", kertas kerja di Seminar Kepimpinan Pelajar, anjuran Kolej Sultan Zainal Abidin (KURZA) Kuala Terengganu, pada 24 Disember 1990, Fakulti Pengajian Pendidikan.

105. Dr. Ghazali Basri. 1990. "Religious Harmony and National Unity", kertas kerja untuk seminar, anjuran Professors World Peace Academy pada 24 Februari 1991, Fakulti Pengajian Pendidikan.

106. Dr. Ghazali Basri. 1990. Where Are Our Youths Heading to? Some Thoughts in Utilizing Youth For Development, kertas kerja bersama Dr. Abd. Halin Hamid dalam International Seminar on Human Ecology and Development, anjuran UPM & IKD Malaysia pada 12 Mac 1991, Fakulti Pengajian Pendidikan.

107. Dr. Ghazali Basri. 1990. "Perbandingan Agama dan Perkembangan Gerakan Kristianisasi di Malaysia", kertas kerja di Bengkel Kursus Latihan Jurulatih Program Komuniti, anjuran Institut Aminuddin Baki Kementerian Pendidikan pada 4 Mac 1991, Fakulti Pengajian Pendidikan.

108. Dr. Ghazali Basri. 1990. Islam dan Permasalahan Masyarakat Majmuk di Malaysia", kertas kerja di Simposium Generasi Muda dan Cabaran Abad Ke 21, anjuran Universiti Islam Antarabangsa Malaysia bertempat di Kuching Sarawak pada 6 Mei 1991, Fakulti Pengajian Pendidikan.

109. Dr. Ghazali Basri. 1990. "Konsep Kepimpinan Dalam Islam", kertas kerja di Konvokesyen Pelajar-Pelajar Islam di Pantai Timur, anjuran Dewan Tertinggi Pelajar Kolej Agama Sultan Zainal Abidin (KUSZA) di Kuala Terengganu pada 24 Mei 1991, Fakulti Pengajian Pendidikan.

110. Dr. Abd. Halin Hamid. 1991. "Where Are Our Youths Heading to? Some Thoughts in Utilizing Youth for Development", kertas kerja (bersama Dr. Ghazali Basri) dalam International Seminar on Human Ecology and Development, anjuran UPM & Institut Kajian Dasar Malaysia, Serdang pada 10-12 Mac 1991, Fakulti Pengajian Pendidikan.

111. Dr. Nazaruddin Hj. Mohd. Jali. 1991. "Pengurusan Kemudahan Sekolah Termasuk Pusat Sumber Pendidikan", kertas kerja di Seminar membincang dapatan, rumusan dan cadangan kajian-kajian di bawah Pinjaman Bank Dunia Ke 8, Kementerian Pendidikan Malaysia di Ramada Renaissance Melaka pada 24-28 Februari 1991, Fakulti Pengajian Pendidikan.

112.

Dr. Nazaruddin Hj. Mohd. Jali. 1991. "Towards the Development of Personnel: a Proposal for Curriculum Design", kertas kerja (bersama Dr. Halimah Ahmad) dalam seminar Human Ecology and Development, anjuran UPM dan Institut Kajian Dasar, di UPM pada 12 Mac 1991, Fakulti Pengajian Pendidikan.

SEMINAR

1. Seminar cum Workshop on The Process Approach to the Teaching of Writing, diadakan pada 14-16 Jun 1990.

2. Kursus Pengurusan dan Penyelenggaraan Makmal Bahasa, diadakan pada 3-7 Disember 1990.

3. Simposium Sehari: Pendidikan ke Arah Kecemerlangan sempena Hari Fakulti Pengajian Pendidikan, diadakan pada 17 Januari 1991.

4. Seminar Peningkatan Pengajaran dan Pembelajaran Bahasa Inggeris di Sekolah-sekolah Rendah Daerah Hulu Langat, diadakan pada 4 Mei 1991.

5. International Seminar on Human Ecology and Development, anjuran UPM & IKD Malaysia pada 29-31 Mei 1991.

6. Bengkel Penterjemahan Buku - anjuran Dewan Bahasa dan Pustaka - Jabatan Sains Kemasyarakatan, UPM pada 29-31 Mei 1991.

7. Seminar Pendidikan Jasmani dan Sains Sukan Menjelang Tahun 2000 Untuk guru, pensyarah Maktab dan Universiti, pegawai Kementerian Pendidikan, KBS dan MSN diadakan pada 28-29 Sept. 1990 di PPPL, UPM.

8. Seminar Kaunseling Dalam Agensi Dan Korporat Untuk Staf Berbagai Agensi dan Korporat diadakan 17 Mac 1990 di fakulti Perikanan, UPM.

FAKULTI KEJURUTERAAN

DEKAN

Prof. Madya Dr. Mohd. Zohadie Bardaie

KAKITANGAN

Jumlah Kakitangan

Jabatan	Kategori A	Kategori B	Kategori C	Kategori D
Pejabat Dekan	2	1	10	11
Kejuruteraan Awam	21	-	7	5
Kejuruteraan Pemproses	8	-	4	3
Kejuruteraan Kuasa dan Jentera	8	-	5	6
Kejuruteraan Perladangan	7	-	5	2
Kejuruteraan Elek/Komputer	16	-	6	4
Kejuruteraan Mek/Sistem	13	-	8	4
Jumlah	75	1	45	35
Jumlah Besar				156

Perlantikan Baru

Seramai 4 Pensyarah, 3 orang Tutor dan 3 orang Juruteknik telah dilantik.

Perletakan Jawatan

Seramai 2 orang Pensyarah telah meletak jawatan.

Cuti Belajar

Seramai 22 orang Pensyarah sedang mengikuti kursus di luar negeri (Ph.D. 20, Master 2).

PERKARA AKADEMIK

Ijazah Lanjutan

Seramai 22 orang pelajar mengikuti ijazah lanjutan iaitu Ph.D. - 8, Master Sains - 19.

Pemeriksa Luar

1. Prof. Ronald Mc Caffer dari University of Loughborough, United Kingdom (Kej. Awam dan Alam Sekitar).
2. Prof. A.K. Kochhar dari Universiti of Bradford, United Kingdom (Kej. Mek/Sistem).
3. Prof. David John Creasey dari University of Birmingham, United Kingdom (Kej. elek/Komp).
4. Prof. Robert M. Peart dari University of Florida, Amerika Syarikat (Kej. Pertanian).

PENYELIDIKAN

1. Prof. Ir. Dr. S.A. Salam: Prestressed Concrete.
2. Dr. Abd. Aziz Zakaria: sistem Pengairan Paip Tertebuk.
3. Dr. Abd. Aziz Zakaria: Mini Sprinkler for Upland Crops.
4. Dr. Amin Mohd. Soom: Trickle Irrigation on Tin Tailing.
5. Dr. Amin Mohd. Soom: Pengangkutan Bahan Kimia dalam Air Pengairan.
6. Kwok Chee Yan: Studies on the Consumptive Use of Padi.
7. Kwok Chee Yan: Effect of Water on the Strength of Padi Soils.
8. Kwok Chee Yan: Abandoned Padi Land - A Study of Moisture Movement and Distribution for the Implmentation of Upland Irrigation.
9. Kwok Chee Yan: Analysis of Frequency Distribution of the Intensity of Rainstorms.
10. Dr. Lee Teang Shui: Investigation of optimal Furrow Irrigation Strategies for Lowland Crops.

11. Mohamed b. Daud: Development of Design Criteria and Water Scheduling Models for Padi Irrigation.
12. Prof. S.A. Salam: Prestressed Hollow Beams.
13. Prof. S.A. Salam: Application of Bamboo and Oil Palm Clinker in Lightweight Reinforce Concrete Beams.
14. Prof. S.A. Salam: Shear Strength of Prestressed Concrete Beams with Triangular Web Openings - Computer Analysis and Experimental Investigation.
15. Prof. Madya Dr. Mohd. Nordin Ibrahim, Prof. Madya Dr. Hussain Mohd. Salleh, Dr. Johari Endan: Analisis dan Penilaian Proses dan Operasi Pengeringan Padi Tempatan.
16. Prof. Madya Dr. Mohd. Nordin Ibrahim, Encik Hishamuddin Jamaludin: Pengeringan Dengan Kaedah Pengoptimuman Dinamik Untuk Peningkatan Mutu Hasil Pertanian (Bijian Koko, Kopi).
17. Prof. Madya Dr. Hussin Mohd. Salleh, Encik Hishamuddin Jamaludin, Prof. Madya Dr. Mohd. Nordin Ibrahim, Encik Wan Mohammad Hj. Abdullah: Penyejukan dan Kemudahan Penyejukan Untuk Simpanan Hasil Pertanian.
18. Prof. Madya Dr. Mohd. Nordin Ibrahim, Encik Nordin Endut, Dr. Johari Endan: Investigation On The Effect of Climatic Factors On Livestock Performance In Climatic Chamber.
19. Encik Nordin Endut, Prof. Madya Dr. Mohd. Nordin Ibrahim, Dr. Johari Endan: Basic Criteria for Optimum Livestock Housing Systems.
20. Encik Hishamuddin Jamaluddin: Kaedah Ringkas Untuk Merekabentuk Proses Kromatografi Ganjakan.
21. Prof. Madya Dr. Mohd. Nur Ahmad: An Innovative Method to Produce Cocoa Powder For Small-Scale Industries.
22. Prof. Madya Dr. Mohd. Nur Ahmad: Automation of Palm Oil Clarification Operations.
23. Prof. Madya Dr. Nur Ahmad: Role of Chemical-Mechanical Processes in Leaching Starch Granules From Sago.
24. Dr. Mohd. Zohadie Bardaie: Vibrational Characteristics of Malaysian Fruits.
25. Dr. Mohd. Zohadie Bardaie: Dynamic analysis of Soil-Tractor - Trailer Interaction During Transportation.
26. Nor Mariah Adam: Piawai Buah Masak Berdasarkan Sifat Kejuruteraan untuk Operasi Ladang Kelapa Sawit yang ber-tepatan.
27. Rimfiel Janius: Design and Construction of A Coffee Depulper.
28. Muhammad Salih Hj. Ja'afar: Pepper Detericating for White Pepper Processing.
29. Muhammad Salih Hj. Ja'afar: Design and Construction of Cocoa Pod Breaker and Separator.
30. Kamarudzaman Aribi: To Design Air Blast Sprayer For Cocoa Plantation.
31. Kamarudzaman Aribi: To Study the Physical, Mechanical and Reological Properties of Cocoa Pod.
32. Dr. Azmi Yahya: Sistem Pengumpulan Data Berpangkalan Mikro komputer Untuk Trantor.
33. Dr. Barkawi Sahari: Analisis Keanjалан -Keplastikan dan pemindahan haba komponen dan bahan kejuruteraan.
34. Encik Baharuddin Hitam: Vibration Analysis of Vehicle Frame.
35. Dr. Bohanuddin Mohd. Ali: Rangkaian Komputer Setempat.
36. Encik Isa Mansor: Analisa dan Rekabentuk Terautomatan Kamiran Skala Besar (VLSI).
37. Encik Megat Mohd. Hamdan Megat Ahmad: Manufacturing Planning and Control System.
38. Puan Napsiah Ismail: Automation and Information.
39. Encik Adznir Mokhtar: Computer Aided Design Manufacturing and Quality Control.
40. Encik Radin Umar Radin Suhadi: Formulasi lapisan Hans Bagi permukaan Lebuhraya laju di Malaysia.
41. Encik Ahmad Rodzi Mahmud: Expert System for Route and Site Location.
42. Prof. Abang Abdullah Abang Ali: Low-cost housing.
43. Mohd. Razali Abdul Kadir: Building System.

44. Encik Ahmad Jusoh: Kajian Sistem Rawatan Air Sisa Industri dan Pertanian.
45. Dr. Azni Hj. Idris: Kajian Penskalaan - naik dan permodelan Sistem Aerobik dan Anaerobik.
46. Encik ahmad Jusoh: Mengkaji Perstasi Penvas Dua, Media Butiran Arang Tempurung Kelapa Sawit dan Pasir.
47. Dr. Fakhru'l-Razi Ahmadun: Ultrafiltration for biomass retention in anaerobic waste water treatment.
48. Dr. M.S. Subrahmanyam: Bearing Capacity of footings on reinforced earth.

PENERBITAN

1. Ahmad Rodzi Mahmud. 1990. "A bit on GIS", **UPM Eng. Review**, No. 2 1989/90.
2. Shattri, Fakhru'l Shattri dan Ahmad Rodzi. 1990. "Remote Sensing and GIS in Engineering Curriculum at the UPM", Abstract in the Jurnal of Water Resources Management (Issue 4/4/1990).
3. Shattri, Fakhru'l, Shattri dan Ahmad Rodzi. 1990. "Remote Sensing and GIS Education in Engineering at the Universiti Pertanian Malaysia", **Rhodes Symposium on Modern Trends of Education in Photogrammetry & Remote Sensing**, Greece.
4. Ahmad Rodzi dan Saufe. 1991. "Towards the development of GIS in Malaysia" - Implementation of Electric Mapping network, **Brno GIS'91 Conference**, Czechoslovakia.
5. Mohd. Rashidi Bakar, C.Y. Kwok, Fazlil Ilahi dan Abdul Munir. "Standardisation of Cone Penetrometer Readings For Padi Soils". **Proceedings of Asia Pacific Regional conference on Engineering for the Development of Agriculture (UPM 5-7 Jun 1990)**.
6. Lee Teang Shui. 1990. "Some Properties of Bamboo for Consideration as Ferrocement Reinforcements". **Journal of Ferrocement** Vol. 20No. 2 April 1990.
7. Lee Teang Shui. 1990. "Investigating Basic Infiltration Rate in a Furrow. **Conference on Agricultural Engineering 11 - 14 Nov. 1990**, University College of Southern Queensland, Toowoomba, Quensland, Australia.
8. Amin, M.S.M. 1990. "Supplemental Irrigation by Low-head Microirrigation System". Paper presented at the **Asia-Pacific Regional Conference on Engineering for the Development of Agriculture**, APCEDA UPM 5-7 Jun 1990. Also in Conference Proceedings pp 160-170.
9. M.S.M. Amin. 1990. "Sistem Mikropengairan". **Risalah Pengembangan** sempena Pameran Hari Konvokesyen di Bukit Expo UPM.10.
10. A.A. Zakaria dan M.S.M. Amin. 1990. "Teaching and Research in Upland Irrigation at UPM" Paper presented at the **Colloquium on Upland Irrigation in Malaysia**. Also in Colloquium Proceedings.
11. M.S.M. Amin. 1991. "Microirrigation Design for Agromaju Sdn. Bhd. Fruit Orchard. **Consultant Report** submitted to the Board of Directors of Agromaju Sdn. Bhd., Johor Bharu.
12. Azni Idris, Ahmad Jusoh, M.S.M. Amin. 1991. "EIA Report on Nilai Industrial Park". Lankhorst Env't. Services.
13. Mohd. Nordin Ibrahim, Kwok Chee Yan, Azmi Yahya, Nordin endut. "Proceeding of **Asia-Pacific Regional Conference on Engineering for the Development of Agriculture**".
14. Salam, S.A. June 1991. "Punching Failure of Bamboo Reinforced Slabs", **Journal of the Institution of Engineers**.
15. Salam, S.A. "A Text Book on The Design of Prestressed Concrete Structures According to BS 8110: 1985, Faculty of Engineering, UPM, 320 pages, 1991. ISBN 976-960-020-3.
16. Salam, S.A. "Structural Applications of Bamboo", **Journal of the Institution of Engineers**, Malaysia, Bil. 45. 1990.
17. Salam, S.a. "Construction Materials from Agricultural and Forest Wastes", **Research Report** submitted to the Ministry of Housing and Local Government, Dec. 1990.
18. Mohd. Nordin Ibrahim, Kwok Chee Yan, Azmi Yahya, Nordin Endut (ed.) "Engineering for the Development of Agriculture: Proc. of **Asia-Pacific Regional Conference**", 5-7 Jun 1990, UPM, Serdang, Selangor.
19. Nor Mariah Adam dan Mohd. Nur Ahmad. "Cocoa Bean shell As A Potential Energy Source For Procoasting of Cocoa Nibs. **Proceedings, Asia-Pacific Regional Conference On Engineering For The Development of Agriculture**. UPM. June 1990.

20. Yahya, A. 1990. "Fuel Properties of Methyl Soyate and Methyl Tallow Esters". Pages 529-542 in M.n. Ibrahim et al. **Asia-Pacific Regional Conference on Engineering for The Development of Agriculture**. UPM, Serdang 1990.
21. Abang abdullah, A.A. 1990. "Indigenous Materials and Technology for Low Cost Housing". **Inaugural lecture**, Universiti Pertanian Malaysia, Serdang 30 August.
22. Abdul Halim Ghazali, Ahmad Jusoh dan Megat Johari Megat Mohd. Noor. "Groundwater Filtration by a rapid dual-media filter", paper presented in the **2nd. International Groundwater Conference**, Kota Bharu, Kelantan, June 1990.
23. Abdul Rahman Ramli, Rahman Wagiran dan Shabudin Shaari. "**Elektronik: Litar dan Peranti**" (Terjemahan), DBP Kuala Lumpur.
24. Ahmad Jusoh dan Johari Megat Mohd. Noor. "Loji Rawatan Air Mini Simenfero", paper presented in **National Seminar on Ferrocement** at UPM, January 1990.
25. Amin, M.S.M. 1990. Supplemental Irrigation by Low-Head Microirrigation System. Proc. **APCEDA**, Julai 1990, MSAE/UPM, Serdang.
26. Anhar Suki, Azni Idris dan Megat Johari M.M.N. "Performance of an upflow anaerobic biofilter for treatment of POME, **Seminar Profram Bioteknologi Kebangsaan Kedua**, Merlin Inn Bukit Fraser, Nov. 5,6 1990.
27. Ayub Mohd. Som dan Azni Hj. Idris. "Operation Manual for Dyeing Effluent Treatment Plant at Unitex, Shah Alam 1990.
28. Azni Hj. Idris, Megat Johari Megat Mohd. Noor, Ahmad Jusoh, Abdul Halim Ghazali dan Anhar Suki. "Anaerobic Digestion of POME using Upflow Biofilter Reactor", paper presented in **International Conference on Water and Waste-water 1190**, at Barcelona, Spain, April 1990.
29. Azni Hj. Idris. "Current Technology in the Treatment of Palm Oil Mill Effluent", **Congress of Malaysia Chemical Engineering Students**, Universiti Teknologi Malaysia, Kuala Lumpur, October 6, 1990.
30. Azni Idris. "Current Trends in teh Wastewater Treatment Processes", **Newsletter on Technology for Development**, Vol. 8, No. 2 1990 (UNESCO/FEISEAP).
31. Azni Hj. Idris, Fakhru'l-Razi Ahmadun, Ahmad Jusoh dan Mohd. Rashid Mohd. Yusof. **Environmental Impact Assessment Report** on Jasma Quarry at Nyalas, Melaka. 1990.
32. Borhanuddin Mohd. Ali. 1990. "Electronic Engineering in UPM-Prospects and Challenges", **FORUM**, Penerbitan Persatuan pegawai Akademik, UPM.
33. Borhanuddin Mohd. Al. 1990. "Voice/data integration in packet switching systems", **UPM Eng. Rev.**, no. 2, pp 12-22.
34. Borhanuddin Mohd. Ali dan Adznir Mokhtar. 1990. "Research and Development Collaboration between University and Industry", paper presented at **International Conference on University Industry Interaction**, Kuala Lumpur, 21-23 August, 1990.
35. Borhanuddin Mohd. Ali. 1990. "Voice/Data Intergation over Local Area Network and Experiment in UPM", paper presented at **Annual ASAIHL seminar on the Impact of Modern Communication Technology on ASAIHL Institution**, Chiang Mai, Thailand.
36. Bujang Kim Huat, Ahmad Jusoh dan Sukri Maail. **Pengenalan Mekanik Tanah**. DBP, Kuala Lumpur 1991.
37. Fakhru'l-Razi Ahmadun dan Shattri Mansor. "Remote Sensing and G.I.S. Education in the Engineering Curriculum at the Universiti Pertanian Malaysia, Symposium : The Rhodes Symposium on Modern Trends in Photogrammetry and Remote Sensing, Rhodes Island, Greece, 13-16 Sept. 1990.
38. Fakhru'l-Razi Ahmadun. "Remote Sensing and GIS Education at the Faculty of Engineering, Universiti Pertanian Malaysia, **Journal: Water Rexources Management** Vol. 4, No. 4 December 1990, European Comm for Water Resources Management Netherlands.
39. Fuad Abas. 1990. "Istilah Kejuruteraan Dalam Kegiatan Ilmiah dalam **Seminar Kebangsaan Peristilahan dan Penulisan Sains USM**, Pulau Pinang, pada 4 Mei 1990.
40. Fuad Abas. 1990. "Perspektif Tenaga dalam Pemprosesan Kelapa Sawit". **Seminar Rangkaian Kebangsaan Penyelidikan Tenaga Ke 5 USM**, Pulau Pinang pada 23 Jun 1990.

41. Fuad Abas. 1990. "Environmental Perspectives of Energy Scenario in Malaysia". **Seminar on Energy and Environment**, Tara Hotel, Bangkok, Thailand, pada 27-30 November 1990.
42. Megat Johari Megat Mohd. Noor, Ahmad Jusoh dan Abdul Halim Ghazali. **Consolidation of Information on Management and Utilization of Oil Palm Waste**, UPM Publisher, 1990.
43. Megat Johari, Azlan Aziz dan Radin Umar. Effects of Cement-Rice Husk Ash Mixture on compaction, Strength and Durability of Melaka Series Lateristic Soil, **Journal of Institution Engineer Malaysia**, December 1990.
44. Mohd. Nur bin Ahmad. "Filtration of Leached Sago Starch Granules as a Preconcentrating Operation: Proc. **Asia Pacific Regional Conference on Energy for the Dev. of Agriculture**, UPM, Serdang, Malaysia, June 1990.
45. Mohd. Nur bin Ahmad. "Optimizing Starch Granule Extraction using a Leaching Prototype Machine: **4th. International Sago Symposium**, Kuching, Malaysia, August 1990.
46. Mohd. Nur bin Ahmad. "Performance of a Processing Separator Using Cascade Teaching Technique", **UPM Engng. Review No. 2**.
47. Mohd. Nur bin Ahmad dan Suhaimi Che Abd. Ghani. "Sterilising Steam penetration and Design of an Oil Palm Fruit Bunch Splitter", Proc. **Asia-Pacific Reg. Confr. on Eng. for the Dev. of Agriculture**, UPM, Serdang, Malaysia, June, 1990.
48. Mohd. Nur bin Ahmad dan Nor Mariah Adam. "Engineering Curriculum at Universiti Pertanian Malaysia for the Agricultural and Food Industries", **Intal. Confr. on University Industry Interaction**, PWTC Kuala Lumpur., August, 1990.
49. Mohd. Nur bin Ahmad. "An Investigation on the Performance of a Small-Scale Sago Starch Extractor" paper delivered at the **Intal. Agricultural Eng., Confr. ad Exhibition AIT Bangkok**, 3-6 December 1990.
50. Mohd. Nur bin Ahmad dan Methew Varuglis. "Prevention of Quality Deterioration of Oil Palm Fruit Bunches Using Hot-air Sterilization", paper delivered at the **Intal. Agricultural Engng. Confr. and Exhibition, AIT Bangkok**, 3-6 December 1990.
51. Mohd. Rashid Mohd. Yusof, Azni Hj. Idris, Habeebullah. **Indoor Air Quality Monitoring at Senju Sdn. Bhd.**, 1990.
52. Radin Umar R.S. Macro dan Micro Accident Investigation Along Seremban Port Dickson Highway, Malaysia, **Proceedings Int. Conference on Traffic Safety**, India, Januari 1991.
53. Radin Umar R.S. dan aminuddin Adnan. Accident Investigation Model For Seremban-Port Dickson Highway, **Proceeding National Seminar on Road Safety**, Kuala Lumpur 1991.
54. Rahman Wagiran, Burhanudin Yeop Majlis dan Abdul Rahman Ramli. "Design and Fabrication Technique of Thick-Film Circuits", kertas kerja dibentangkan dalam **Seminar Fizik dalam Industry**, 19-20 Sept. 1990, Johor Bharu.
55. Rahman Wagiran, Mohamad Isa b. M. "VLSI Circuits Analysis Using SEM Voltage Contrast", diterima untuk diterbitkan dalam **G/S Annual**, the Institution of Engineers Malaysia, 1990.
56. Rahman Wagiran. "Peranti Semi-kondutor dan Komponen Elektronik", kertas kerja Kursus untuk **Kursus Asas Elektrik dan Elektronik Bagi Pembantu Makmal**, 26-30 November 1990. Jabatan Fizik, UPM.
57. Salam, S.A. Bamboo Reinforced Slabs. **Engineering Review No. 2**, UPM, 1990.
58. Shahnor Basri, D.T. Gethin dan M. Mehdar. Loading direction Effect in a Three Lobe Profile Bore Bearing: **Journal Institution of Mechanical Engineers**, London, Part G, September, 1990.
59. Zainol Abidin Abdul Rashid, Mahamod Ismail dan Borhanuddin Mohd. Ali. 1990. "Voice transmission over PC network", **Proceeding International Conference on Information Technology**, Kuala Lumpur.
60. Zakaria AA dan MSM Amin. 1990. Upland Irrigation Education and Research at UPM. **Proc. Colloquium on Upland Irrigation in Malaysia MSAE/UPM** October 1990.
61. Zakaria Che Muda dan Mohd. Salleh Jaafar. Satu Perbandingan Mengenai Rasuk Konkrit Tetulang, **UPM Engineering Review No. 2** 1989/90.
62. Zakaria Che Muda. Analisis Kumpulan Cerucuk 3- Dimensi, **UPM Engineering Review No. 2** 1989/90.

63. Zakaria Che Muda. Automated and Self Adaptive Integrated P.C. Based Computer Aided design and Detailing of Slab. **International Conference FEMCAD & OPTIMIZATION IITT** -International, Nov. 1990 Los Angeles.

64. Zakaria Che Muda. Data Communications and Interfacing between Finite Element packages. **International Conference FEMCAD & OPTIMIZATION IITT** -International, Nov. 1990 Los Angeles.

65. Zohadie, M. dan Chan, K.W. 1990. "Knowledge-based decision system for tractor-trailer selection in a plantation", in Proceeding of the **Asia-Pacific Regional Conference on Engineering for the Development of Agriculture**, Universiti Pertanian Malaysia, Serdang, pp. 443-452.

66. Zohadie, M. dan Lai, K.L. 1990. "Computer expert system for break-down

diagnostic of agricultural tractors", accepted for publication in **Agricultural Mechanization in Asia, Africa and Latin America, Journal of the Farm machinery Industrial Research Corporation**, Japan.

SEMINAR

1. Asean Pacific Regional Conference For The Development of Agriculture (Apceda) diadakan pada 5-7.6.90.

2. Upland Irrigation Colloquium pada 16.10.1990.

3. Irrigation Management Game diadakan pada 30.10.1990.

4. Program Tanpa ijazah M.Sc. in Irrigation UPM-UNUT mulai Mei-Ogos 1991.

5. Short Course on Prestressed Concrete-Design and Construction according to Malaysian Drafft Code diadakan pada 14-16.5.91.

FAKULTI SAINS DAN PENGAJIAN ALAM SEKITAR

DEKAN

Profesor Dr. Mohamed bin Suleiman

KAKITANGAN

Jabatan	Kategori A	Kategori B	Kategori C	Kategori D
PejabatDekan	6	-	13	13
Biokimia dan Mikrobiologi	18	1	16	12
Biologi	25	-	24	21
Fizik	25	1	15	9
Kimia	29	-	23	18
Matematik	44	-	3	5
Sains Alam Sekitar	16	-	11	7
Pusat Sains Asasi	26	-	2	3
Jumlah	189	2	107	88
Jumlah				386

Perlantikan Baru

Seorang juruteknik, 1 orang kerani, 2 orang jurutaip dan 2 orang pembantu am rendah telah dilantik.

Perletakan Jawatan

Dua orang pensyarah telah meletakkan jawatan

Cuti Belajar

Seramai 19 orang pensyarah sedang mengikuti kursus di dalam dan luar negeri (Ph.D.) 17, Master 2)

Cuti Sabatikal

Dua orang pensyarah menamatkan cuti sabatikal di dalam dan luar negeri

PERKARA AKADEMIK

Ijazah Lanjutan

Seramai 10 orang pelajar mengikuti Ijazah Lanjutan iaitu Ph.D. -4 dan M.Sc.-6.

Pemeriksa Luar

1. Prof. A.P. Cracknell dari University of Dundee, Scotland.
2. Prof. Dr. Hisashi Sumitomo dari Dept. of Sanitary and Environmental Engineering, Kyoto University, Japan.

3. Prof. S. Radhakrishna dari Department of Physics, Indian Institute of Technology, Madras, India.

4. Prof. M.A.K. Lodhi dari Texas Tech. University, Department of Physics, Lubbock, USA.

PENYELIDIKAN

1. Dr. Nyonya Abdul Razak: Studies on the growth of iicrob in a fermentor system for production of lipase.

2. Dr. Johari Ramli: Biokimia racun makhluk perosak.

3. Dr. Kamaruzaman Ampon: Development of a rapid, easy and economical screening kit for the detection of cellular factors from animals and plants.

4. Dr. Kamaruzaman Ampon: Protease modification for use in the synthesis of sugar esters and oligopeptides in organic solvent system.

5. Dr. Kamaruzaman Ampon: Tailor making by chemical modification of industrially important protein molecules.

6. Dr. Kamaruzaman Ampon: Fats and oil biotechnology- Chemical modofication of enzymes.

7. Dr. Kamaruzaman Ampon: Purification and characterization of proteolytic enzymes from *Hevea brasiliensis* for use in genetic engineering.
8. Dr. Kamaruzaman Ampon: Biosensors.
9. Dr. Khatijah Yusoff: Molecular studies of the Newcastle disease virus.
10. Dr. Khatijah Yusoff: Molecular biology of the fowlpox virus.
11. Dr. Khatijah Yusoff: Plant viruses - characterisation and control.
12. Dr. Lee Chaing Hin: Cyclic AMP Metabolism in nitrogen fixing bacteria.
13. Dr. Lee Chaing Hin: Cyclic AMP Metabolism in leguminous plants.
14. Dr. Mohd. Arif Syed: Bioteknologi Fundamental (Enzim Nuklease dari Lateks *Hevea brasiliensis*).
15. Dr. Mohd. Arif Syed: Plant biochemistry its role in plant regulation and plant improvements.
16. Dr. Mohd. Noor Abd. Wahab: Pemencilan organisma selulolitik dan pengkajian ciri-ciri enzim ekstraselular.
17. Dr. Mohd. Noor Abd. Wahab: Pengolahan substrat dan penukaran selulosa kepada gula.
18. Dr. Nor Aripin Shamaan: Insecticide Resistance in Insects.
19. Dr. Nor Aripin Shamaan: Vitamin E and chemical Hepatocarcinogenesis in the rat.
20. Dr. Nor Aripin Shamaan: Purification of serum proteins in the buffalo and cattle.
21. Dr. Norani Abdul Samad: Teknik pergesahan DRSV & DyMV di Orkid.
22. Dr. Norani Abdul Samad: Epidemiologi virus tumbuhan.
23. Dr. Norani Abdul Samad: Virus-virus di kacang dan sayuran.
24. Dr. Norani Abdul Samad: Virus di *Hevea* sp.
25. Dr. Othman Abd. Samah: Fermentasi Koko.
26. Dr. Othman Abd. Samah: Fibre digestion and ruman biochemistry.
27. Dr. Radzali Muse: Tisu kultur koko dan bawang - hasil-hasil sekunder dan semulajadi.
28. Dr. Radzali Muse: Interaksi kulat patogen, fungicides dan tumbuhan *in vitro*.
29. Dr. Radzali Muse: Micropropagasi tumbuhan tersebut *in vitro*.
30. Dr. Tong Chow Chin: Bioconversion of Agrowastes.
31. Dr. Tong Chow Chin: Mushroom project.
32. Dr. Abu Bakar Salleh: Teknologi Enzim.
33. Dr. Jambari Haji Ali: Kawalan Biologi Nyamuk.
34. Dr. Jambari Haji Ali: Kawalan Biologi dan Ekologi Siput Air Tawar Malaysia.
35. Dr. Jambari Haji Ali: Kajian Biologi dan Ekologi Pathogen Peringkat Immatur *Elaeobius kamerunicus*, Pendebunga Kelapa Sawit.
36. Dr. Ahmad Ismail: Pencemaran Logam Berat di Ekosistem Muara dan Pantai.
37. Dr. Ann Anton: Produktiviti Akuatik.
38. Dr. Ann Anton: Kesan Pembalakan terhadap Biodiversiti Sungai.
39. Dr. Azhar Phoon Chum Guan: Biology of Stingless bees.
40. Dr. Azhar Phoon Chum Guan: Honey production potential of Carambola orchards.
41. Dr. Ho Yin Wan: Soil-borne pathogens of oil palms.
42. Dr. Ho Yin Wan: Nutritional requirements of *Ganoderma boninense* from oil palm.
43. The Taxonomy, physiology and ecology of *Colletotrichum* species on sweet and hot peppers in Peninsular Malaysia.
44. Dr. Ho Yin Wan: Rumen ecology and metabolism.
45. Dr. Saberi Othman: Conservation and utilization of plant resources.
46. Idris Abd. Ghani: Biologi dan Ekologi Organisma Interstisial di Malaysia.
47. Idris Abd. Ghani: Produktiviti Akuatik Sekunder (Zooplankton dan Bentos).
48. Idris Abd. Ghani: Biologi Zooplankton Pembawa Parasit Ikan.
49. Ahmad Abd. Rahman: Zingiberaceae sebagai bahan makanan, ubatan dan tanaman hiasan.
50. Ahmad Abd. Rahman: *Ficus cunia* tumbuhan buahan yang berpotensi di Malaysia.
51. Ahmad Abd. Rahman: Pembiakan *in vitro* beberapa spesies tumbuhan ubatan.

52. Faridah Abdullah: Determining virulence of *Ganoderma* species infection oil palm.
53. Dr. Quah Soon Cheang: Genetics and Breeding of Mungbean.
54. Ruth Kiew: Revision of poorly known groups of Malaysia flowering plants.
55. Dr. Tan Soon Guan: Genetic identification of strains and genotypes of buffaloes and goats from Southeast Asia.
56. Dr. Tan Soon Guan: Biochemical genetic markers in Malaysia's animal and plant species.
57. Dr. Mohd. Yusof Sulaiman: Asas Fizik Nuklear.
58. Dr. Mohd. Yusof Sulaiman: Penggunaan Teknik Tomografi dalam Pertanian.
59. Dr. Abdul Halim Shaari: Penyediaan Pencirian Bahan-bahan Magnet dan Semikonduktor.
60. Dr. Abdul Halim Shaari: Superkonduktor Suhu Tinggi.
61. Dr. Yahya Mat Hassan: Instrumentasi.
62. Dr. Shaharin Ibrahim dan Dr. Nasiman Sapari: Disposal of Solid and Toxic Wastes Effects on Groundwater.
63. Dr. Chow Sai Pew: Kajian Sifat Pukul Elastik dan Struktur Bahan dengan Menggunakan Teknik Ultrasonik.
64. Dr. Sidek Hj. Abd. Aziz: Pencirian Sifat (Elektrik, Terma, Magnet dan Elastik) bagi Bahan Seramik.
65. Dr. Mansor Hashim: Kajian Struktur Bahan Seramik Dielektrik dengan Menggunakan Belauan Sinaran -x.
66. Dr. Elias Saion: Teknik dan Penggunaan Pengukuran Tanpa Musnah dengan Menggunakan Sinar Gamma.
67. Prof. M.A.K. Lodhi: Prefeasibility Study of Renewal Sources of Energy in Malaysia.
68. Dr. W. Mahmood Mat Yunus: Application of Photoacoustic Technique.
69. Dr. Hj. Kaida Khalid: The development of Multipurpose Moisture Content Meter by Using Microwave Technique.
70. Dr. Shaharin Ibrahim: Penjagaan Tenaga Elektrik Melalui Punca Tenaga Alternatif Mikro Hidro.
71. Dr. Salleh Harun: Membina dan Menggunakan Spektrometer Magnet Nukleus dalam Pertanian dan Perubatan.
72. Encik Atan b. Mohd. Sharif: Mengkaji Kimia dan Keaktifan Biologi *Popoivia posocarpa* (Annonaceae).
73. Encik Atan b. Mohd. Yusof: Mengkaji Kandungan Kimia dan Keaktifan Biologi *Tabernaemontana corymbosa* (Apocynaceae).
74. Dr. ab. Rahman b. Manas: Keaktifan Biologi Kimia Hasil Semulajadi.
75. Dr. Asmah bte Haji Yahaya: Kajian Ke Atas Teknik-teknik Pencernaan dan Analisis Bagi Unsur-unsur Surih Dalam Makanan, Bahan Pertanian dan Air.
76. Dr. Faujan b. Hj. Ahmad: Pengasingan Bahan Aktif Dari Kulit Kayu.
77. Dr. Faujan b. Hj. Ahmad dan Puan Zaiton Hassan: Pengasingan dan Penecaman dari monascus sp.
78. Dr. Hamdan b. Suhaimi: Struktur Surfaktan Dalam i) Minyak Sawit, ii) Misel Campuran.
79. Dr. Karen A. Crouse: Preparation, Characterization and Reactions of Transition Metal Complexes.
80. Dr. Karen A. Crouse: Study of Reactions on Activated Carbon.
81. Puan Kamaliah bte Sirat: Sintesis, Pengasingan dan Pencirian Komplek Logam Peralihan.
82. Puan Kamaliah bte Sirat: Kajian Terma Kompleks V(III) - Oksalato.
83. Dr. Kuang Endinekau: Kandungan Asid EPA dan DHA Dalam Lemak Ikan-ikan di Malaysia.
84. Dr. Lee Chnoong Kheng: Lithium In Conductors.
85. Dr. Lee Chnoong Kheng: Analysis of Heavy Metals In Agricultural and Environmental Samples Using ZCP-AES.
86. Prof. Madya Dr. Low Kun She: Chemical analysis of Toxic Metals In Agricultural And Environmental Samples Using ICP-AES.
87. Prof. Madya Dr. Nordin b. Hj. Lajis: The Chemical Studies of Biologically Active Natural Products.
88. Dr. Mawardi b. Rahmani: Naturally Occurring Insecticides From Higher Plants And Microorganisms.

89. Dr. Mawardi b. Rahmani: Chemical Constituents of Phyllanthus Species.
90. Dr. Mawardi b. Rahmani: Chemical Analysis Of The Constituents Of Local Honey.
91. Dr. Mohd. Zaizi b. Desa dan Dr. Wan Md. Zin b. Wan Yunus: Cibacron Blue 3GA Dan Reactive Yellwo 2 Masing-Masing Dengan Amberlit XAD-7 Dan Amberlyst A27.
92. Dr. Mohd. Zobir b. Hussein, Dr. Zulkarnain b. Zainal dan Prof. Dr. Hj. Badri b. Muhammad: Penyediaan dan Pencirian Karbon Aktif Dari Kayu Kayan Tropika- I Kayu Keras.
93. Dr. Md. Jelas b. Haron: Pengekstrakan Ferum Daripada Minyak Sawit Menggunakan Penukar Ion Poli (Asid Hidrok-samik).
94. Dr. Mohamad Zaki b. Ab. Rahman: Kajian Penggunaan Kompleks Koordinasi Logam Dan Organologam Sebagai Anti-Kulat/Mikrob.
95. Dr. Mohamad Zaki b. Ab. Rahman: Tindak balas Metatesis Degradasi Terhadap Getah Asli.
96. Dr. Mohd. Aspollah Hj. Sukari: Penyelidikan Komponen Kimia Tumbuhan-tumbuhan Tempatan Dan Keaktifan Biologinya.
97. Dr. Mohd. Aspollah Hj. Sukari: Penyelidikan Keracunan Tumbuhan-tum-buhan Terhadap Haiwan Akuatik.
98. Puan Rehan bt. Haji Mohd. Nor: Kajian Mengenai Masalah Pelajar Dalam Menuliskan Nama Bagi Sebatian-sebatian Or-ganik Berpolifungsi.
99. Puan Rehan bt. Haji Mohd. Nor: Kajian Mengenai Masalah Pelajar Dalam Mengguna Dan Menghubungkaitkan Konsep Apabila Menuliskan Mekanisme Tindak Balas Organik.
100. Dr. Sidik b. Silong: Mereka-Bentuk, Menyedia dan Mencirikan Kompleks Koor-dinasi Logam.
101. Dr. Sidik b. Silong: Kajian Kegunaan Sebatian Koordinasi Dan Organologam Sebagai Antikulat/Serangga.
102. Dr. Tan Wee Tee: Removal of Haz-ardous Chemical By Agricultural Residues.
103. Dr. Tan Wee Tee: Electroanalytical Studies of Selected Metal Ion complexes.
104. Dr. Wan Md. Zin b. Wan Yunus: Sin-tesis, Pencirian Dan Penggunaan Penukar Ion Mengkelat.
105. Dr. Wan Md. Zin b. Wan Yunus: Penyediaan Lipase Tersekat-Gerak Dan Penggunaannya Di Dalam Biotransofrmasi Lipid.
106. Dr. Wan Md. Zin b. Wan Yunus: Penyediaan Dan Penggunaan Elektrod Enzim.
107. Dr. Zulkarnain b. Zainal, Dr. Mohd. Zobir b. Hussein dan Prof. Dr. Hj. Badri b. Muhammad: Kekonduksian Beberapa Kar-bon Teraktif.
108. Dr. Zulkarnain b. Zainal: Penyediaan dan Pencirian Arang Teraktif dari Kayu Bakau dan Lain-lain Kayu-kayan Tropika.
109. Dr. Zulkarnain b. Zainal: Kajian Elektrokimia Bagi Semikonduktor.
110. Prof. Madya Dr. Kamel Ariffin Mohd. Atan: Zeros of a Linear Combination of Chebyshev Polynomials.
111. Suriah Md. Amin: Penggunaan Per-samaan cherbyshev dalam penyelesaian Per-samaan Pembezaan biasa.
112. Dr. Ismail Mohd: Kedah Titik Pen-dalaman.
113. Dr. Ismail Mohd: Kaedah Penen-tudalaman.
114. Dr. Ismail Mohd: Matematik Selang.
115. Hajjah Fatimah Ahmad: Manage-ment of End-User Computing at Data Processing Departments.
116. Saiman Mat Baok: Menyelesaikan suatu Persamaan Pembezaan biasa Kaku Peringkat Tiga secara langsung.
117. Mohd. Rizam Abu Bakar: Solving linear equation with multiple roots.
118. Mohd. Rizam Abu Bakar: Knapsack Problem.
119. Mohd. Nooh Hassan: Modeling climatic variables with application in yield forecasting.
120. Dr. Abu Talib Othman: Perform-ance, queueing network, Computer Systems, Communications system.
121. Dr. Abu Talib Othman: Perform-ance of communication systems.
122. Dr. Leow Soo Kar: Reliability of Computer Software.

123. Dr. Leow Soo Kar: Using SIMSCRIPT for Simulation Models.
124. Fauziah Maarof: Inverse Gaussian Models.
125. Dr. Kassim Haron: On Mutipurpose designs with constraint imposed on costs.
126. Azmi Jaafar: Terjemahan buku "Calculus, Basic Concepts and Applications".
127. Azmi Jaafar: Algoritma Polinomial - Pengaturcaraan Linear.
128. Azizah Suliman: Development of an MRP (Material Requirement Planning) system for medium and small scale industries in Malaysia.
129. Azizah Suliman: Building an expert system for the honey bee management.
130. Dr. Peng Yee Hock: Polinomial Kromatik.
131. Dr. Isa Daud: Menggunakan nilai-nilai eigen dalam menentukan cerapan yang berpengaruh dalam model melibatkan data mandirian.
132. Dr. Isa Daud: Diagnostik dalam model risiko persaingan.
133. Zaiton Muda: Pakej Indentasi dan Pembetulan Ralat mudah bagi Aturcara PAS-CAL.
134. Zaiton Muda: Pencirian Getah Asli dan Ekstrak Bahan Pertanian.
135. Noor Akma Ibrahim: Competing risks and survival analysis.
136. Mohamad Othman: Building an expert system in Rubber industry.
137. Mohd. Hassan Selamat: Prototyping approach to Information System Development.
138. Fudziah Ismail: Type insensituri codes for the solution of stiff and non-stiff ODES.
139. Dr. Harun Budin: Variational Method in Nonlinear Boundary Value Problems.
140. Dr. Mansor Monsi: Langkah Tunggal Simetri terulang dalam menentukan pensifar 1990/91.
141. Prof. Dr. Mohamed Suleiman: Penyelesaian Persamaan Pembezaan Biasa.
142. Dr. Nasiman b. Sapari: Disposal of Solid and Toxic Wastes - Effects on Groundwater.
143. Dr. Nasiman b. Sapari: Kualiti Air-bawah Tanah dan Kajian rawatan Pencemaran.
144. Dr. Mohd. Nasir b. Hassan: The Economic Evaluation of Waste Disposal Impacts on Groundwater and the Environment.
145. Dr. Mohd. Ismail b. Yaziz: Monitoran Kualiti Sumber Alam dan Penilaian Dedahan Serta Risiko Kepda Kesihatan Awam.
146. Dr. Mohd. Ismail b. Yaziz: A Study of Plant Operational Parameters and Aluminium Levels in Finished Drinking Water Supplies.
147. Dr. Mohd. Ismail b. Yaziz: Development of a Risk Categorization System for Non-Conventional Drinking Water Treatment Systems.
148. Dr. Zelina bt. Zaiton Ibrahim: The Coastal and Marine Environment.
149. Dr. Zelina bt. Zaiton Ibrahim: Coastal and Estuarine Processes.
150. Dr. Ramadzani b. Abdullah: Coastal Resource Use Planning.
151. Dr. Zelina bt. Zaiton Ibrahim: Ocean-Atmosphere Interaction.
152. Dr. Anhar b. Suki: Kualiti Alam Sekitar dan Cara Kawalan.
153. Dr. Anhar b. Suki: Keberkenanan dan Rekabentuk Proses Rawatan Air dan Air Buangan.
154. Dr. Mohd. Ismail b. Yaziz: Panduan Penglolaan Proses Rawatan Kumbahan.
155. Encik Azman b. Zainal Abidin: Pemerhatian Pola Bahan Pencemaran Udara Dari Segi Ruang dan Masa.
156. Encik Azman b. Zainal Abidin: Kajian Profil Tegak dan Parameter Meteorologi.
157. Prof. Madya Dr. Muhamad b. Awang: Kesan Pencemaran Udara Serta Simulasi Hujan Asid Terhadap Tanaman Pertanian dan Perhutanan.
158. Prof. Madya Dr. Muhamad b. Awang: Kesan Kenaikan Aras Kepekatan Karbon Dioksida; Suhu dan Status Air Serta Nutrien Terhadap Tanaman Pertanian dan Species Hutan Hujan Tropika.
159. Dr. Anhar b. Suki: Mengkaji dan Memodel Kualiti Sumber Air.
160. Dr. Wan Nor Azmin b. Sulaiman: Kajian Pengelasan Kawasan Lembangan di Semenanjung Malaysia.

161. En. Mohd. Kamil b. Yusoff: Kajian Pengelasan Kawasan Lembangan di Semenanjung Malaysia.
162. Dr. Ramdzani b. Abdullah: Penilaian Kesan Pembangunan Terhadap Alam Sekitar di Semenanjung Malaysia.
163. Dr. Azizi b. Muda: Penilaian Kesan Pembangunan Terhadap Alam Sekitar di Semenanjung Malaysia.
164. Encik Abdul Wahid b. Ghazali: Pengurusan Sisa Domestik dan Industri di Shah Alam dan Petaling Jaya- Satu Kajian Perbandingan dan Kesannya Terhadap Alam Sekitar.
165. Dr. Nasiman b. Sapari: Pemetaan Alam Sekitar Dengan Kaedah Analisis Imej.
166. Prof. Madya Dr. Muhamad b. Awang: Kesan Perubahan Iklim Terhadap Tanaman Pertanian.
167. Dr. Vijaya S. Kanapathipillai: Seed borne diseases of kidney beans, chilli and bendi. June - Sept. 1990.
168. Dr. Vijaya S. Kanapathipillai: Cuti sabatikal. Studies on *Colletotrichum gloeosporioides*, the anthracnose pathogen of citrus fruits. 1 Oct. 1990 - 30 June 1991.
169. Dr. Vijaya S. Kanapathipillai: Microfungi of lemon, mango, banana, durian, orchid, anthurium, cocoa and rubber were screened with intention of isolating *Colletotrichum* species. Oct. 1990 (UPM).
170. Dr. Vijaya S. Kanapathipillai: Isolation of *C. gloeosporioides* species from citrus fruits from various localities. Callus culture preparation. Cultural studies of isolates of *C. gloeosporioides* and isozyme studies of the anthracnose pathogen. 6 Nov. 1990 - 10 March 1991. (La Trobe University, Australia).
171. Dr. Vijaya S. Kanapathipillai: Comparison of Australian isolates with local isolates, culturally and by isozyme study. Writing up data. 11 March - June 1990 (UPM).

PENERBITAN

1. Nyonya Razak, Raja Noorzaliha A. Rahman, Abu Bakar Salleh, Kamaruzaman Ampon, Wan Zin w. Yunus dan Mahiran Basri. 1991. Lipase interasel daripada *Rhizopus oryzae* dan parameter-parameter yang mempengaruhi penghasilannya. *Sains Malaysiana* (Sains Hayat), 20 (In press).

2. Ampon, K., Salleh, A.B., Salam, F., Wan Yunus, M.M.Z., Nyonya Razak, C.N.A., Basri, M., 1991. Reductive alkylation of lipase. *Enzyme Microbiol. Technol.*, 13 - (In press).
3. Ampon, K., Salleh, A.B., Salam, F., Wan Yunus, M.M.Z., Nyonya Razak, C.N.A., Basri, M., 1991. Sugar esterification catalysed by alkylated trypsin in dimethylformamide. *Biotech. Letters* (In press).
4. Ampon, K., Salleh, A.B., Salam, F., Wan Yunus, M.M.Z., Nyonya Razak, C.N.A., Basri, M., 1990. Modification of lipase by ethylene glycol. *Biocatalysis*. (In press).
5. M.Y.A. Samad, A.B. Salleh, C.N.A. Razak, K. Ampon, W.M.Z.W. Yunus & M. Basri. 1990. A lipase from a newly isolated thermophilic *Rhizopus rhizopodiformis*. *World Journal of Microbiology and biotechnology* 6, 390-394.
6. Norhani Abdullah, Asiah Hamzah, Johari Ramli dan Makhdzir Mardan. 1990. Identification of Nasonov pheromone and the effects of synthetic pheromones on the clustering activity of Asiatic honeybee (*Apis cerana*). *Pertanika* 13(2) 189-194.
7. Ampon, K. and Means, G.E. 1990. Enzymatic removal of asparaginase using immobilized asparaginase. *Malaysian Journal of Applied Biology*, 19(1): 103-107.
8. Ampon, K., Salleh, A.B., Salam, F., Wan Yunus, M.M.Z., Razak, C.N.R. & Basri, M. 1991. Reductive alkylation of lipase. *Enzyme Microbiol. Technol.*, (In press).
9. Ampon, K. and Means, G.E. 1990. Kinetic behaviour of trypsin immobilized on to porous organic beads. *Biotechnology and bioengineering* (In press).
10. Huges, J., Yusoff, K., Hardy, R., McCartney, H., Emmerson, P.T. dan Samson, A.C.R. 1991. Sequence analysis of temperature sensitive and 'neuraminidase-tolerant' mutants of Newcastle disease virus. (Strain Beauditte C) *Archives of Virology* (In press).
11. Yusoff, K. 1990. The glycosylation sites on the jaemagglutinin-neuraminidase glycoprotein of Newcastle disease virus. *Proceedings 15th Malaysian Biochemical Soc. Conf.*, 90-91.
12. Shahidin, F., Yusoff, K dan Ibrahim A.L. 1990. Construction of CDNA from Newcastle disease virus velogenic strain AF2240. *Proceedings, 2nd. Congress vet. Assoc. Malaysia*, 145-146.

13. **Yusoff, K. dan Ibrahim, A.L.** 1990. Molecular analysis of Newcastle disease virus strain V4. Proceedings 39th Western Poultry disease Conference, 123.
14. **Lim S.T., Ong KK, Lee C.H., Isnin Kamis** 1990. Transactions mal. Soc. Plant Physiol 1: 265-268.
15. **Mohd. Arif Syed, Mohd. Puad Abdul-lah dan Marziah Mahmood** . 1990. Effects of nitrate, ammonium and glutamine on growth and the nitrogen metabolism enzymes in the peanut cell suspension cultures. Proc. 15th MBS Conf., POS-4-03.
16. **Khattak, M.S., Marziah M. dan Syed M.A.** 1990. Induction of rice callus from mature seeds. Trends in Biotechnology in the Asia-Pacific Region K.L. 31 July - 2 Aug. 1990.
17. **Wahab, M.N., Sipat, A., Esaki, N., dan Soda, K.** 1990. A study on the Thermostability of xylanase from *Bacillus coagulans*, *Bacillus acidocaldarius* and *Streptomyces thermovulgaris*. The 3rd. JSPS-VCC Seminar, December, Kuala Lumpur.
18. **Wan Ngah W.Z., Jarien Z., San M.M., Marzuki A., Md. Top G., Shamaan N.A. dan Khalid A.K.** 1991. The effects of tocotrienols on hepatocarcinogenesis induced by 2-acetylaminofluorene in rats. *Amer. J. Clin. Nutri.* 53(4): 1076S-1081S.
19. **Wan Ngah W.Z., Jarien Z., Rajikin M.H. dan Shamaan N.A.** 1991. Effects of nicotine on glutathione metabolising enzymes and some conjugation enzymes in the rat. *Asia Pacific J. Pharmacol.* 6: 55-61.
20. **Wan, Ngah W.Z., Shamaan N.A. Jarien Z., Ssid M.H. dan Azhar M.T.** 1990. Glutathione metabolising enzymes in nasopharyngeal carcinoma patients. Proc. 15th Ann. Conf., Malaysian Biochem. Soc., 3-4 September 1990, Universiti Kebangsaan Malaysia, Kuala Lumpur.
21. **Wan Ngah W.Z., Jarien Z., Shamaan N.A., Suhaimi H. dan B.A.K. Khalid.** 1990. Effect of tocotrienol on glutathione metabolizing enzymes in the stomach of rat induced with hepatocarcinogenesis. Second Colloquium on Medicine, 21-22 July 1990, Universiti Kebangsaan Malaysia, Kuala Lumpur.
22. **Norani Abdul Samad dan Zainab Ari.** 1991. The use of antibody sensitized latex to detect Cymbidium mosaic virus in orchids. PERTANIKA (Submitted).
23. **Norani Abdul Samad.** 1991. A serious disease of chilli (*Capsicum annum* L. caused by chilli veinal mottle virus and tomato spotted wilt virus. PERTANIKA (submitted).
24. **M.Y. Hussein dan Norani Abdul Samad.** 1991. Intercropping chilli, maize and brinjal to suppress populations of *Aphis gossypii* Glov. and transmittion of chilli viruses. Tropical Agricultuer (submitted).
25. **Abdul Samah, O., Puteh, M.F. dan Selamat, J.** 1990. Small scale cocoa fermentation using pure culture of *S. cerevisiae* (wild strain) on cocoa flavour. Symposium on Trends in Biotechnology in the Asia-Pacific region UPM, Serdang. p. 76. 31.7 - 2.8.1990, UPM.
26. **Abdul Samah, O., Puteh, M.F. dan Selamat, J.** 1990. Small scale cocoa fermentation inoculated with *Acetobacter xylinum*. Proceedings of the Fifteen in Malaysia Biochemical Society Conference. pp 122-124. 3-4 Sept. 1990, K.L.
27. **Abdul Samah, O., Puteh, M.F. dan Selamat, J.** 1990. Comparative studies on small scale fermentation of cocoa using *Acetobacter xylinum* and *Saccharomyces cerevisiae* (wild strain). Proceedings of the Fifteen the Malaysian Biochemical Society Conference. pp. 103-107. 3-4 Sept. 1990, Kuala Lumpur.
28. **Abdul Samah, O., Puteh, M.F. dan Abdul Rahman, A.R.** 1990. Effect of dilution rate on ethanol production by *Saccharomyces cerevisiae* (wild strain). IUMS. Congress: Bacteriology & Mycology - Osaka, Japan. p. 102. 16-22 Sept. 1990, Osaka, Japan.
29. **Abdul Samah, O., Puteh, M.F. dan Alimon, H.** 1990. Asas Bakteriologi. Penerbit Karyawan, Bandar Baru Bangi.
30. **Radzali Muse, S. ISAAC, HAMISH A. COLLIN dan KEITH HARDWICK.** 1990. The biochemistry and physiology of Witches' Broom disease of *Theobroma cacao*, L. - Effect of *Crinipellis pernicios* (Stahel) Singer phytotoxins on host cells *in vitro*. Proc. of Malays. 3rd Intern. Conf. on Plant Protection in the Tropics (MAPPS) Genting Highlands, Malaysia p. 226.
31. **Radzali Muse, S. ISAAC, HAMISH A. COLLIN dan KEITH HARDWICK.** 1990. The effects of phenols as potential phytotoxins

- in the culture filtrate of *Crinipellis pernicios* (Stahel) Singer on the growth of *Theobroma cacao*, L. tissues. Proc. of the 1st Malays. Appl. Biol. Soc. Symp. UPM, Serdang. p. 58.
32. HARIAH MUNIP, Radzali Muse dan MARZIAH MAHMOOD. 1990. Pertumbuhan patogen kulat *Colletotrichum gloeosporioides*. Abstract of the 13th Malays. Microbiol. Symp. Kuala Lumpur. pp. 68-69.
 33. Radzali Muse, HAIRIAH MUNIP dan MARZIAH MAHMOOD. 1990. Kesan filtrat kultur patogen kulat *Colletotrichum gloeosporioides* ke atas pertumbuhan tisu koko, *Theobroma cacao*, L. Proc. the 15th Malays. Biochem Soc. Conf. Kuala Lumpur. pp. 118-121.
 34. Radzali Muse, S. ISAAC, HAMISH A. COLLIN dan KEITH HARDWICK. 1990. Isolation and purification of phytotoxin from culture filtrate of *Crinipellis pernicios* (Stahel) Singer by silica gel thin layer chromatography. Proc. of the 4th National Chemical Analysis Symp. Serdang.
 35. Radzali Muse, S. ISAAC, H.A. COLLIN dan KEITH HARDWICK. 1990. The effect of phenolics as potential phytotoxins in the culture filtrates of *Crinipellis pernicios* on the growth of *Theobroma cacao* L. Tissues. Proc. 1st. Malaysian Appl. Biol. Symposium, 27-28 February 1990 UPM, Serdang.
 36. Radzali Muse, S. ISAAC, H.A. COLLIN dan KEITH HARDWICK. 1990. Effects of *Crinipellis pernicios* Culture Filtrates on the *Theobroma cacao* L. Tissues and Cell-suspensions growth. Proc. 3rd International Conference on Plant Protection in The Tropics 20-23 March 1990 Kuala Lumpur, Malaysia.
 37. Radziah Muse, HAIRIAH MUNIP dan MARZIAH MAHMOOD. 1990. Pathogenicity of *Colletotrichum gloeosporioides* on cocoa seedlings. *Cafe' Cacao The (France)* (In press).
 38. Radzali Muse. 1990. Koko-kultura tisu dan sel-suspensi. *Berita Sains* (In press).
 39. Radzali Muse. 1991. Bioassay of secondary metabolite with suspended cell lprotoplasts of *Theobroma cacao* L. Reg. Conf. on Medicinal Products from Tropical Rain Forest S. FRIM, Kepong, Selangor. p:34.
 40. Tong, C.C. 1990. Cellulases of *Volvariella volvacea*. Symposium on Trends in Biotechnology in the Asia-Pacific Region. 31 July - 2 August 1990. UPM, Serdang, Selangor.
 41. Tong, C.C. 1990. Cellulases of *Volvariella volvacea*. Symposium on Trends in Biotechnology in the Asia-Pacific Region. 31 July - 2 August 1990. UPM, Serdang, Selangor.
 42. Jambari Haji Ali: "The distribution of *Physastra sumatrana* with notes on its life cycle". Paper presented at the 26th Scientific Seminar, Malaysian Society of Parasitology and Tropical Medicine, Penang, Feb. 22-24, 1990 (Abstract).
 43. Jambari Haji Ali: "The distribution of freshwater snails of Peninsular Malaysia with notes on the prevalence of *Schistosoma spindale*, the causative agent for cercarial dermatitis". Paper presented at the 2nd International Congress of Medical and Applied Malacology, Seoul, Korea, June 25-30, 1990 (Abstract).
 44. M.Y. Hussein, N.H. Lajis dan J.H. Ali: "Biological and Chemical factors associated with the successful introduction of *Elaeodobius kamerunicus* Faust, the oil palm pollinator in Malaysia". Paper presented at 6th International Symposium on Pollination, 27-31 August 1990, Tilburg, Netherlands.
 45. Jambari H. Ali, Rosli Mohamad dan Norlina Hanafi. "Acute toxicity of Carbofuran in three species of Malaysian Freshwater snails". Paper presented at the First National Convention of the Malacological Society of the Philippines, Manila, 2nd December 1990.
 46. Ahmad Ismail. Logam berat dalam sedimen di Pantai Barat Semenanjung Malaysia. Simposium Biologi Gunaan Pertama, UPM Serdang, 27-28 Februari, 1990.
 47. Ho, Y.W., Bauchop, T., abdullah, N. dan Jalaludin, S. 1990. *Ruminomyces elegans* gen. et sp. nov., a polycentric anaerobic rumen fungus from cattle. *Mycotaxon*. 38: 379-405.
 48. Nawawi, A. and Ho, Y.W. 1990. Effect of temperature and pH on growth patterns of *Ganoderma boninense* from oil palm in Peninsular Malaysia. *Pertanika*. 13: 303-307.
 49. Ho, Y.W. dan Nawawi, A. (1990). Effect of carbon and nitrogen sources on growth of *Ganoderma boninense* from oil palm. *J. Pl. Prot. Trop.* In press.

50. Abdullah, N., Ho, Y.W., Mahyuddin, M. dan Jalaludin, S. 1990. Studies in fibre digestion and urea kinetics in cattle and buffaloes. Proc. of 5th AAP Animal Science Congress, Taipei, Taiwan, June 1990. pp.39.
51. Ho, Y.W., Abdullah, N. dan Jalaludin, S. 1990. Microbial degradation of fibrous materials in buffalo and cattle. Proc. 5th AAP Animal Science Congress, Taipei, Taiwan, June 1990. pp. 44. Extracellular polysaccharide degrading enzymes of anaerobic rumen fungi. Proc. of 5th AAP Animal Science Congress, Taipei, Taiwan, June 1990. pp.40.
52. Jalaludin, S., Romziah, S., Ho, Y.W. dan Abdullah, N. 1990. The effect of supplementation on growth rates of steers. Proc. of 5th AAP Animal Science Congress, Taipei, Taiwan, June 1990. pp. 45.
53. Abdullah, N., Ho, Y.W. dan Jalaludin, S. 1990. Role of rumen microbes in the breakdown of by-products. Proc. Workshop on Integrated Tree Cropping and small Ruminant Production Systems, Medan, Sumatra, Sept. 10-15, 1990.
54. Abdullah, N., Ho, Y.W. Mahyuddin, M. dan Jalaludin, S. 1990. Comparative studies in fibre digestion between cattle and buffaloes. "In Domestic Buffalo Production in Asia". Proc. Joint FAO/IAEA/ACIAR Research Coordination and Planning Final Meeting. Tropical Cattle Research Centre, Rockhampton, Australia Feb. 20-24, 1989. pp. 75-87.
55. Ahmad Ismail. General Problems in Museum. CMI MERCEN Biodeterioration 1990, Kew, London 22 June 1990.
56. Ahmad Ismail. The effects of development in Malaysia on coastal wildlife. International wildlife Conservation and Management Training Course Malaysia 1990, 2 Julai 1990.
57. Ahmad Ismail. The effects of Thermal Discharge on Marine phytoplankton. Proc. 12th Annual Seminar of the Malaysian Society of Marine Sciences.
58. Anton, Ann 1991. Algae in the conservation and management of Malaysian Freshwater. In: The State of Nature Conservation in Malaysia (In press).
59. Ibrahim, A.L., Jalaludin, S. dan Ho, Y.W. 1990. The role of teaching and research instructions in the transfer of knowledge. In "Livestock Production and disease in the Tropics". Proc. 6th Conference of Institute of Tropical Veterinary Medicine. Aug. 28 - Sept. 1, 1989. Wageningen, Holland, pp. 106-110.
60. Jalaludin, S., Ho, Y.W. dan Abdullah, N. 1990. Enhancing small ruminant production in Southeast Asia. Proc. Workshop on Integrated Tree Cropping and Small Ruminant Production Systems, Medan, Sumatra, Sept. 10-15, 1990.
61. Jalaludin, S. dan H, Y.W. 1990. Asian farmers and education. Proc. Intern. Symp. of Southeast Asian Agricultural and Japan. Nihon University, Japan, 19-20 April, 1990.
62. Ho, Y.W., Abdullah, H., Jalaludin, S. dan H. H. Kudo. 1990. Diversity of anaerobic gut fungi. 13th Mal. Microbiol. Symp. 22-23 Aug. 1990, Kuala Lumpur. pp. 26-27.
63. Ho, Y.W., Abdullah, N. dan Jalaludin, S. 1990. Invasion and colonization by anaerobic rumen fungi. "The rumen ecosystems. The Microbial Metabolism and its Regulations". (Eds. S. Hoshino, R. Onodera, H. Minato and H. Itabashi. Jpn. Sci. Soc. Press Springer-Verlag. and pp. 101-107.
64. Abdullah, N. dan Ho, Y.W. 1990. Rumen protozoa. 13th Mal. Microbiol. Symp. Kuala Lumpur. 22-23 Aug. 1990. pp. 28-29.
65. Ho, Y.W. Kanapathipillai, V. dan Hashim, M. 1990. Seed-borne fungi of chilli, 13th Mal. Microbiol. Symp. Kuala Lumpur, 22-23 Aug. 1990. pp. 73-74.
66. Ho, Y.W., Abdullah, H., Jalaludin, S. dan H. H. Kudo. 1990. Fermentation activity of a Polycentric fungus. In "Animal industry vision in the 90's through technology". Proc. 2nd Congr. Vet. Asso. Malays. Oct. 6-10, 1990, Kuala Lumpur pp. 137-139.
67. Jalaludin, S. dan Ho, Y.W. 1990. Efficient education system in agriculture. The 7th Asian Agricultural Symposium. 13-14 November 1990. Kyushu Tokai University, Kamamoto, Japan. pp. 1-14.
68. Ho, Y.W. dan Bauchop, T. 1991. Morphology of three polycentric rumen fungi and description of a procedure for the induction of zoosporogenesis and release of zoospores in cultures. J. Gen. Microbiol. 137: 213-217.
69. Ho, Y.W., Abdullah, N. dan Jalaludin, S. 1991. Fungal colonization of rice straw and palm press fibre in the rumen of cattle and buffalo. Anim. Feed Sci. Technol. In press.

70. Abdullah, N., Ho, Y.W. dan Jalaludin, S. 1991. Microbiol colonization and digestion of feed materials by rumen microbes in cattle and buffaloes: I. Guinea grass Asian-Australasian J. Anim. Sci. In press.
71. Abdullah, N., Ho, Y.W. dan Jalaludin, S. 1991. Fibre digestion in cattle and buffalo. Asian-Australian J. Amin. Sci. In press.
72. Jalaludin, S., Ho, Y.W. dan Abdullah, N. 1991. Increasing digestibility of lignocellulosic materials for ruminant productions Mal. Appl. Biol. In press.
73. Abdullah, N., Ho, Y.W. dan Jalaludin, S. 1991. Microbiol colonization and of digestion feed materials in cattle and buffaloes: ii. Rice straw and palm press fibre. Asian-Australasian J. Amin. Sci. Submitted.
74. Jalaludin, S. dan Ho, Y.W. 1991. Animal production in Southeast Asia- status and research directions. Proc. ACIAR (Australian Centre for International Agricultural Research) Research Coordination and Planing Final Meeting, Petaling Jaya, Malaysia, 10-14 Feb, 1991. In press.
75. Jalaludin, S. Abdullah, N., Ho, Y.W. Jalan, Z. dan Kudo, H. 1991. Effect of feeding urea-treated palm press fibre on voluntary intake and digestibility of sheep and goat in "Recent Innovations in the Animal and Animal Products Industry". Eds. I. Yahaya, A. Hamid, E.A. Ahmad and A.M. Othman. pp. 198-200.
76. Ho, Y.W., N. Abdullah, S. Jalaludin dan H. Kudo. 1991. Fungal colonisation of fibrous and non-fibrous feed materials in goats. Proc. International Seminar on Goat Production in the Asian Humid Tropics. Hat Yai, Thailand, 28-31 May 1991.
77. Jalaludin, S., Ho, Y.W. dan Lajis, M.N. 1990. The Unesco Science Programme. Unesco Workshop. Port Dickson, 26-27 June 1990.
78. Zaharah, S., Ho, Y.W., Abdullah, N., Jalaludin, S. dan H. Kudo 1991. Rumen fungi from cattle and swamp buffalo. Unesco National Workshop on Promotion of Microbiology in Malaysia. 28-29 Jan, 1991. UPM, Serdang, Selangor.
79. Idris, B.A.G. et. al. 1990. Soft Bottom Communities of Merbok, Matang and Pulau Redang Area in Peninsula Malaysia. Asean-Australian Cooperation Programme in Marine Science and Coastal Living Resources Group Report.
80. Idris, B.A.G. and Ahmad Ismail. 1990. Logam Berat dalam Sedimen di Persisiran Pantai Barat Semenanjung Malaysia. Proseding Seminar Biologi Gunaan I, Persatuan Biologi Gunaan Malaysia, UPM 1990.
81. Kamarudin Dahuli, Muhamad Ridha Muhamad Yusuf dan Saberi Othman. 1990. Succession and Ecosystem Development: 1. Distribution of Plant species in a tin tailings and its relation to edaphic factors. Paper presented at the Symposium of Applied Biology, Malaysia. 27-28 Feb. 1990, UPM, Serdang.
82. Saberi Othman. 1990. The soils of tin tailings in Sungai Besi, Selangor. Paper presented at the Seminar and 10th Meeting on Standardization of plant and fertilizer analysis and their interpretation, Kuching, Sarawak, East Malaysia. 6-7 March, 1990.
83. Saberi Othman. 1990. Distribution patterns of *Asystasia intrusa* Bl. in a pine plantation. Paper presented at the conference on "Conservation of Tropical Biodiversity", Selangor, Malaysia, 12-16 Jun 1990.
84. Saberi Othman dan Umi Kalsom. 1990. Ferns and fern allies of Kuching Division, Sarawak. Paper presented at the conference on "Conservation of Tropical Biodiversity", Selangor, Malaysia, 12-16 Jun 1990.
85. Saberi Othman. 1990. Vegetation analysis of Matang Mangrove Forest, Kuching Sarawak, East Malaysia. International Conference on Forest Biology and Conservation in Borneo, July 30 - August 3 1990. Kota Kinabalu, Sabah.
86. Saberi Othman. 1990. Analysis of vegetation and stratification of trees in Mangrove forest at Samariang the Batu, Kuching, Sarawak, East Malaysia. Paper presented at 2nd International Symposium, The Tree, 10-15 Sept. 1990,, The Botanical Institute, Montpellier, France.
87. Saberi Othman. 1990. Environmental Impact Assessment and Ecological Report for Miri Waters. Report Submitted for the Baram Delta Gas Gathering (BARDEGG) Project, Miri, Sarawak, Malaysia.
88. Saberi Othman. 1990. Effect of Nitrogen and Phosphorus on the growth of Mangrove plants. Research News, UPM, 3(3): 2-3.

89. Ahmad, A.R. 1990. Zingiberaceae species as Medicinal Plants in Malaysia. Poster presented at The International Congress on Traditional Medicine and Medicinal Plants. October 15-17, 1990, Denpasar, Indonesia.
90. Ahmad, A.R., M. Marziah, H.F. Ahmad. 1990. Kunyit-kunyit di Malaysia dan Khasiatnya. Buletin Pengembangan 12. PPPL, UPM, Serdang, Selangor
91. Marziah, M. dan Ahmad, A.R. 1991. In vitro Propagation of *cucurma* Species. Paper presented at 4th International Plants Biotechnology Conference, Costa Rica.
92. Ahmad, A.R. dan M. Marziah. 1991. Pemiakan Senduduk Putih (*Melastoma decemfidum*) in vitro. Paper presented at: Regional Conference on the Medicinal Products from Tropical Rain Forest, 13-15 Mei, 1991, FRIM, Kepong.
93. F. Abdullah, T.K. Lim dan R.B. 1990. "Electrophoresis as an Aid to the Taxonomy of Some Local *Ganoderma* Species" In Abstracts of Fourth International Mycological Congress at Regensburg, Germany, 28 Aug. - 3 Sept. 1990, edited by Reisinger and Bresinsky.
94. F. Abdullah. 1990. Application and Limitations in Electrophoresis in Fungal Taxonomy. Paper presented at the 13th Symposium of Persatuan Mikrobiologi Malaysia held in Kuala Lumpur, 18 Aug. 1990.
95. Quah S.C. dan H.M. Yusoff. 1990. Nodule variation among mungbean varieties. Malays. Appl. Biol. In press.
96. Dr. Ruth Kiew. 1990. Reassessment of the generic status of *Codonoboea* (Gesneriaceae) and its species. *Blumea* 35: 167-176.
97. Dr. Ruth Kiew. 1990. Three new species of *Pentaphragma* from Borneo. *Kew Bull.* 45: 545-554.
98. Dr. Ruth Kiew. 1990. Notes on the ground flora of Gunung Keriong, Pahang, Malaysia, including two new species. *Malay. Nat. J.* 43: 240-249.
99. Dr. Ruth Kiew. 1990. Conservation of plants in Malaysia. in Baas, P., K. Kalkman & R. Geesink (eds.) *Plant Diversity in Malesia*, Kluwer Acad. Pub., Dordrecht, Netherlands. pp. 313-322.
100. Tan, S.G. Selvaraj, O.S., Sekaran, M., Mukherjee, T.K., Barker, J.S.F. 1990. Cellulose acetate electrophoresis of native Southeast Asian buffaloes and goats: Some technical aspects. *Isozyme Bulletin* 23:110.
101. Tan, S.G. Selvaraj, O.S., Sekaran, M., Mukherjee, T.K., Barker, J.S.F. 1990. Biochemical polymorphisms in Swamp buffaloes (*Bubalus bubalis*). I. Cellulose acetate gel methodology. In: M.K. Vidyadaran, T.I. Azmi, P.K. Basrur (Eds.). "Proceedings of the Seminar on Buffalo Genotypes for Small Farms in Asia". Universiti Pertanian Malaysia, Serdang pg. 255-261.
102. Selvaraj, O.S., Sekaran, M., Mukherjee, T.K., Tan, S.G. Barker, J.S.F. 1990. Biochemical polymorphisms in Swamp buffaloes (*Bubalus bubalis*). II. Population and Family Studies. In: M.K. Vidyadaran, T.I. Azmi, P.K. Basrur (Eds.). "Proceedings of the Seminar on Buffalo Genotypes for Small Farms in Asia". Universiti Pertanian Malaysia, Serdang. Pg. 263-270.
103. Gan, Y.Y. Azmi, T.I., Tan, S.G., Latif, A.I. 1990. Restriction fragment length polymorphisms of mitochondrial DNA in buffaloes. In: M.K. Vidyadaran, T.I. Azmi, P.K. Basrur (Eds.). "Proceeding of the Seminar of the Seminar on Buffalo Genotypes for Small Farms in Asia". Universiti Pertanian Malaysia, Serdang. Pg. 195-196.
104. Tan, S.G., Rita, M, Gan, Y.Y. 1990. Diagnostic biochemical markers in *Helopeltis theobromae*. *Isozyme Bulletin* 23:111.
105. Gan, Y.Y. Otis, G., Tan, S.G., Mardani, M. 1990. Enzyme polymorphisms in tropical honey bees. *Isazyme Bulletin*. 23:85.
106. Selvaraj, O.S., Sekaran, M., Panandam, J.M., Mukherjee, T.K., Tan, S.G., Barker, J.S.F. 1990. The use of Kodak Photoflo - 600 solution in Cellulose Acetate Electrophoresis. In: S. Alaudeen, S.H. Ton, A. Shaharuddin (Eds.) "Proceedings of the 15th. Malaysian Biochemical Society Conference". The Malaysian Biochemical Society, Kuala Lumpur. Pg. 166-168.
107. Selvaraj, O.S., Sekaran, M., Panandam, J.M., Mukherjee, T.K., Tan, S.G., Barker, J.S.F. 1991. Genetic differences among Southeast Asian native goat populations based on biochemical markers. In: S. Saithanoo,

- B.W. Norton (Eds.). "Goat Production in the Humid Tropics". Prince of Songkla University and the University of Queensland, Hat Yai. Pg. 108-113.
108. Barker, J.S.F., Mukherjee, T.K. Tan, S.G., Selvaraj, O., Sekaran M., Panandam, J. 1990. Genetic variation in Swamp buffalo (*Bubalus bubalis*) and native goat (*capra hircus*) populations of Southeast Asia. Paper presented at 37th Annual Meeting of the Genetics Society of Australia, Adelaide, Australia. 3 - 5.7.90.
109. Tan, S., G. 1990. Electrophoretic studies of buffaloes and goats of Southeast Asia: Some preliminary results. Paper presented at a departmental seminar, Dept. of Biology, Universiti Pertanian Malaysia, Serdang, 28.9.90.
110. Selvaraj, O.S., Mukherjee, T.K., Tan, S.G., Barker, J.S.F. 1990. Biochemical polymorphisms in the local goats of Southeast Asia. Paper presented at XXII. International conference on Animal Genetics. East Lansing, USA. 25-31.8.90.
111. W. Mahmood bin Mat Yunus. 1990. Pekali Pengionan Townsend dalam Campuran Gas Penning. Abstrak: Seminar Jabatan 13 Jun, 1990.
112. M.A.K. Lodhi, S. Ibrahim dan S.W. Ali. 1990. Memorandum of Understanding For Scientific Colloboration Between Universiti Pertanian Malaysia. Texas Tech. University and Pakistan Solar Energy Research Centre P.C.S.I.R. Karachi, Pakistan.
113. Shaharin Ibrahim, Badri Muhammad, M.A.K. Lodhi, Mahdi Abd. Wahab dan W. Mahmood Mat Yunus. Nov. 1990. Small Scale Electricity Production For Remote Areas From Slow Moving River Current, Proc. Int'l Conference on Energy and Environment, Bangkok, Thailand.
114. S. Ibrahim, M.A. Wahab dan M.N. Haron. Sept. 1990. Penjanaan Tenaga Elektrik Dari Air Sungai Untuk Kawasan Desa. Proc. National Seminar On Physics and Industry, U.T.M., J. Bharu.
115. S. Ibrahim, M.A. Wahab dan A. Latif. Sept. 1990. The Performance of a Two Metre Aperture Solar Bowl Under Normal Incidence, Proc. National Seminar On Physics and Industry, U.T.M., J. Bharu.
116. M.A.K. Lodhi, M.Y. Sulaiman dan S. Ibrahim. 1990. A Solar Bowl electric Power Plant for Normal solar Flux. (Submitted for publication).
117. M.A.K. Lodhi, S. Ibrahim dan M.Y. Sulaiman. 1990. A Proposed Solar Pond Power Plant using Offshore Brine. (Submitted for publication).
118. S. Ibrahim, M.A.K. Lodhi dan M.Y. Sulaiman. 1990. Harnessing of Slow Moving River Current to Produce Electricity For Remote Area. (Submitted for publication).
119. Mohd. Yusof bin Sulaiman. June 1990. Basic Electronic Course, Universiti Pertanian Malaysia.
120. Mohd. Yusof bin Sulaiman. Sept. 1990. National Seminar on Physics on Physics in Industry, Universiti Teknologi Malaysia.
121. Mahdi bin Abdul Wahab. 1990. Performance of a 2-metre aperture solar bowl at normal incidence. Seminar at UTM, Johor.
122. Mahdi bin Abdul Wahab. 1990. Solar bowl design at UPM.
123. Mahdi bin Abdul Wahab. 1990. Penjanaan tenaga elektrik daripada sistem minihidro untuk penggunaan desa. Seminar at UTM, Johor.
124. Mahdi bin Abdul Wahab. 1990. Small scale electricity production for remote areas from slow moving current. Seminar at Bangkok, Thailand.
125. Mahdi bin Abdul Wahab. 1990. Experimental heat pump using data acquisition system. Departmental Seminar.
126. Mahdi bin Abdul Wahab, Shaharin Ibrahim dan Mohd. Yusof Sulaiman. 1991. "Expected Performance q a 32 metre UPM Solar Bowl at Normal Incidence", send for publication in the ASEAN Journal on Science and Technology for Development, Thailand, 14th Februari 1991.
127. Mahdi bin Abdul Wahab. 1991. "Temperature Profiles for an Air to Water Heat Pump Counterflow Condenser", send for Publication in the Journal of Islamic Academy of Sciences, Turkey, 27th April 1991.
128. K.B. Khalid, Y.M. Hassan, A.R. Ramli, Z. Abbas. Sept. 1990. Agricultural Industry Applications of Microwave in Malaysia, 'Seminar Kebangsaan Fizik Industri' UTM.

129. W.M. Daud, M. Badri, dan H. Mansor. 1990. Electrical Transport and Related Dielectric Phenomena in Coconut-Shell Activated Carbon. *J. app. Phys*, 1990, 67(4), 1915.
130. Zainal Abidin bin Sulaiman. 1990. Pembinaan Sistem tomografi berkomputer di Jabatan Fizik UPM. Prosiding Persidangan Sains dan Teknologi Nuklear UKM.
131. Zainal Abidin bin Sulaiman. 1990. Kajian ke atas aloi cair dalam keadaan tak seimbang dengan kaedah musnahabisan positron. Prosiding Persidangan Sains dan Teknologi Nuklear.
132. Zainal Abidin bin Sulaiman. 1990. Characterization of rubber by gamma-ray attenuation. Prosiding Persidangan Sains dan Teknologi Nuklear UKM.
133. H.A.A. Sidek, G.A. Saunders dan B. James. 1990. The Pressure and Temperature dependences of the elastic behaviour of Lithium Tetraborate. *J. Phys. Chem. Solids*, 51, 457-465.
134. Sidek Hj. Ab. Aziz, Hj. Salleh Haron, Ab. Halim Shaari, Chow Sai Pew, Ghazali Ahmad dan Mohd. Salleh Mohd. Deni. 1990. Pendekatan Ujian Tak Memusnah Bagi Penganalisan Ciri Kenyal Bahan Kayu. Seminar Fizik dalam Industri, UTM.
135. Ab. Halim Shaari, Mansor Hashim dan Sidek Hj. Ab. Aziz. Sept. 1990. Magnetism in Industry. Seminar Fizik dalam Industri, UTM.
136. H.A.A. Sidek dan G. A. Saunders. Oktober 1990. Ciri Elastik bagi Kaca Superionik; Binari (Ag_2O) (B_2O_3) dan Ternari (AgI) (Ag_2O). (B_2O_3) - Seminar Fizik Keadaan Pepejal V, IFM, Universiti Kebangsaan Malaysia, Bangi.
137. Abdul Halim bin Shaari. September 1990. Magnetism in Industry to be presented at UTM. "Physics in Industry".
138. Abdul Halim bin Shaari. September 1990. Pendekatan Ujian Tak Memusnah bagi Penganalisan bahan kayu, akan dibentangkan di UTM. "Physics in Industry".
139. Muhammad Yahaya, Jamil Suradi, Mohd Noh Dalimin dan a. Halim Shaari. Oktober 1990. Kemagnetan dan Kesuperkonduksian Bahan YBa ($\text{Cu}_{1-x}\text{M}_x$) O_7 , $\text{M} = \text{Fe}$, Co dan Ni . (UKM).140.
- Elias Saion. September 1990. Ke arah Penentuan Kualiti Kayu dengan Kaedah Ujian Tanpa Musnah Pengecilan Sinar -Y. Seminar Kebangsaan Fizik Dalam Industri. (UTM).
141. Elias Saion. September 1990. Industrial Application of Internal Structure Imaging Ionising Radiation. Seminar Kebangsaan Fizik Dalam Industri. (UTM).
142. Elias Saion. Jun 1990. Microdosimetric Concepts in Radiation Protection and Development of A Co-Axial Double Cylindrical TEPC. Seminar Jabatan Fizik. (UPM).
143. Elias, S., Z.A. Sulaiman, P. Subramaniam, M.Y. Sulaiman dan M.H. Sahari. 1991. A Simple Wood Quality Evaluation Technique using -Ray Attenuation in Some Tropical Hardwoods. PERTANIKA.
144. Elias, S. dan D.E. Watt. 1991. Calculation of the Effective Stopping Power in Ions Generated by Neutrons in Tissue Constituents. PERTANIKA.
145. Elias, S. dan D.E. Watt. 1991. A Coaxial Double Cylindrical TEPC for Microdosimetry of Neutrons < 850 keV in Mixed Fields for Faster Neutrons. *Journal of Islamic Academy*.
146. Elias Saion. 1991. Projected Ranges of Low Charged Particles in Tissue Constituents. *Jurnal Fizik Malaysia*.
147. Elias Saion. 1991. Microdosimetry of Neutrons of Selectable Energy in Mixed Fields of Faster Neutrons. Seminar Fizik Nuklear, UKM, Bangi.
148. Atan Mohd. Sharif dan Alan O. Fitton. 1990. The Cyclisation of N-Acyl Derivatives of 2-Amino-1-ol to Oxazolines or Isoquinolines. *Pertanika*, 13(3), 389-393.
149. Atan Mohd. Sharif dan Mohd. Noor Abd. Wahab. Isolation and Anti Bacterial Activity of Methuenine from *Tabernaemontana Corymbosa* (Apocynaceae). (In press).
150. Atan Mohd. Sharif, Mohd. Noor Abd. Wahab dan Nordin Hj. Lajis. 1990. Isolation and Antibacterial Activity of Popowia Pisocarpa Alkaloids. *Proceedings of the 7th National Seminar of The Natural Products Group, Universiti Sains Malaysia*, 27-28 June 1990.
151. Atan Mohd. Sharif. 1990. Penggunaan Teknik Kesan Overhauser Nukleu Dalam Mengkaji Kedudukan Kumpulan

- Penukar Ganti Di Atas Gelang Benzene, Prosiding Simposium Kimia Analisis Kebangsaan Ke IV, Universiti Pertanian Malaysia, 4-6 September 1990.
152. Atan Mohd. Sharif, Nordin Hj. Lajis dan Mohd. Noor Abd. Wahab. 1990. Kajian Tumbuhan Ubat Sebagai Agen Anti Bakteria, Pesta Konvokesyen, Universiti Pertanian Malaysia ke XIV, 16-19 Ogos 1990.
 153. Atan Mohd. Sharif dan Mohd. Noor Abd. Wahab. (In press). Isolation and Anti Bacterial Activity of an Indole Alkaloid from *Tabernaemontana* *Corymbosa* (Apocynaceae), Proceeding of The Regional Conference on Medicinal Products from Tropical Rain Forests, Institut Penyelidikan Perhutanan Malaysia, Kepong, 13-15 Mei 1991.
 154. Asmah Haji Yahaya. 1990. "Pencernaan Sampel Protein (Ikan Bilis) Bagi Penentuan Logam Berat Dengan Spektrofotometri Serapan Atom" - Kertas Kerja di Simposium Kimia Analisis Kebangsaan Keempat. 4-6 September 1990, UPM.
 155. Faujan H. Ahmad dan Zaizi Desa. 1990. "Pewarna Asla Tumbuhan Di Sekililing Kita", *Bulitein Pengembangan*. Dalam penerbitan.
 156. Faujan Ahmad. 1990. Extraction and Identification of Volatile Oil from Flower of *E. Olifera* X *E. Guineesi* Hybrid oil Palm Newsletter of the Regional Network for the Chemistry of Natural Products in Southeast Asia, Jilid 14(2), m.s. 2.
 157. Faujan Ahmad. 1991. Pengenalan Penyelesaian Stereokimia. Penerbit Universiti Pertanian Malaysia, Serdang, Selangor.
 158. Hamdan Suhaimi dan Anuar Kassim. 1990. "Pengaruh Lipid dan Surfaktan Pada Struktur Lipid Stratum Corneum", Prosiding Kimia Analisis Kebangsaan Ke IV, Jilid 1, 359-379.
 159. Hamdan Suhaimi dan Anuar Kassim. 1990. "Formation of Model Epidermal Lipid", Seminar on Cosmetic Chemistry. Penang.
 160. Hamdan Suhaimi dan Anuar Kassim. 1990. "Surfactant Association Structure", Prosiding on Regional Seminar on Surface Science and Heterogenous Catalysis, Penang.
 161. K. Endinseau dan T.W. Woodward. 1990. "Application of Conjugable Oxidation Products Assay in Assessment of Gamma-Irradiated Palm Olein". *PERTANIKA* 13(1), 101-106.
 162. K. Endinseau dan A. Kassim. 1990. "Kesan Fisikokimia Penyinaran-Gamma Ke Atas Asid Lemak Olein Sawit". Kerja Di Simposium Kimia Analisis Kebangsaan Ke Empat, 4-6 September 1990, UPM.
 163. K. Endinseau dan T.W. Woodward. 1991. "Effects of Gamma-Irradiation on Peroxides Formation in Palm Olein". *PERTANIKA* 14(1).
 164. Lee, C.K. dan Low, K.S. 1990. EDTA Extractable Arsenic in Relation to Available Forms in Soils. *Pertanika*, 13(2), 261-265.
 165. Lee, C.K. dan Low, K.S. 1991. Accumulation of Arsenic by Aquatic Plants. *The Science of the Total Environ.*, In press.
 166. Lee, C.K. dan West, A.R. 1991. Liquid-like Lithium Ion Conductivity in $\text{Li}_{4-3x}\text{Al}_x\text{GeO}_4$ Solid Electrolyte, *J. Mat. Chem.*, 1, 149-150.
 167. Lee, C.K. dan West, A.R. 1991. Conductivity Behaviour of $\text{Li}_{4-3x}\text{Al}_x\text{GeO}_4$ Solid Solutimo at High Temperatures. Proceeding of the Third International Symposium of the Kandy School of Science on Solid State Physics, 22-27, April, Kandy, Sri Lanka.
 168. Tan, W.T., Oooi, S.T., dan Lee, C.k. 1990. Removal of Chromium (V) from Solutions by Coconut Husk and Palm Pressed Fibres. Proceeding of the 1990 Pacific basin Conference on Hazardous Waste, Paper No. 9003; Nov., Hawaii, USA.
 169. Low, K.S. dan Lee, C.K. 1990. The Removal of Cationic Dyes Using Coconut Husk as an Adsorbent *Pertanika*, 13(2), 221-228.
 170. Low, K.S. dan Lee, C.K. 1991. Cadmium Uptake by the Moss, *Calympereo Delesertii* Besch., bio. Waste. In press.
 171. Low, K.S. dan Lee, C.K. 1991. Effect of Organic Matter on the Immobilization of Cadmium in Four Malaysian Cocoa Growing Soils. *Pertanika*. In press.
 172. Low, K.S. dan Lee, C.K. 1991. Arsenic Contents in Some Malaysian Vegetables. *Ibid* in press.

173. M. Badri dan K.A. Crouse. 1990. Penyediaan dan Pencirian Karbon Aktif. Prosiding Simposium Kimia Analisis Kebangsaan IV. UPM Serdang. 4-6 Sept. 1990.
174. M. Badri dan Karen A. Crouse. 1990. Preparation and Characterization of Activated Carbon. Proceeding Int. Symposium on Adv. Technology. New Material Based on their Natural Appearances. Osaka Municipal Tech. Res. Inst. 14-15 Oct. 1990.
175. M. Badri dan Karen A. Crouse. 1990. Adsorption Potential of Activated Carbon. Proceedings of the Malaysian Chemical Conference, 15-17., 1990, Penang.
176. M. Badri, Karen A. Crouse dan Chua Sook Yan. 1990. Adsorption Potential of Activated Carbon in Some Acidic and Alkaline Media. *Pertanika* 13(1), 73-77.
177. K.A. Crouse dan M. Badri. 1991. Thermal Studies on Chromium (II) Salts. *Thermochim. Acta*, 177, 239-251.
178. J. Micheal Hollas dan Mohd. Zobir bin Hussein. 1990. Rotational Contour Analysis of the Band of the AAu-S Ag Electronic Transition of Trans-Oxalyl Fluoride. *J. Chem. Soc. Faraday Trans.*, 86(11), 2015-2019.
179. J. Micheal Hollas dan Mohd. Zobir bin Hussein. 1990. Vinyl Torsional Potential Function of 4-Fluorostyrene in the So Electric State from electric Absorption and Supersmic Jet Fluorescence Spectroscopy, *J. Molec. Spectrosc.* 145, 89-99.
180. N.H. Lajis. 1990. Chemical Products from the Forests, Proceedings of the Forestry and Forest Products Research 3-4 Oct. 1990. Kuala Lumpur.
181. N.H. Lajis. 1990. The Chemistry and Pharmacology of Malaysia Medicinal Plants. Proceedings of Malaysian Medicinal Plants. Proceeding of the 3rd JSPS-VCC Seminar of the Integrated Engineering, Kuala Lumpur 17-18 Dec. 1990.
182. N.H. Lajis. 1990. Sintesis Organik - Dewan Bahasa Publishing.
183. N.H. Lajis. 1990. "Chemical Products from the Forest", presented and Conference on Forestry and Forest Products Research, FRIM, 3-4. Oct. 1990.
184. N.H. Lajis. 1990. "The Alkaloids of Some Malaysian Medicinal Plants", presented at the International Congress on Traditional Medicinal Plants - Danpasar, Indonesia 15-17 Okt. 1990.
185. N.H. Lajis. 1990. "Integrating Chemistry in the Research on Traditional Medicine", presented at the Workshop on integration of Traditional Medicine in Primary Health Care, Kuala Lumpur, 12-16 Nov. 1990.
186. M.A. Yarmo, A. Alimuniar., R.A. Ghani, M.Z. Ab. Rahman, R.A. Rahman, K. Ismail. 1990. "Analysis Hasil Tindak Balas Metatesis cis-1, 4-poliisoprena pada Berbagai Suhu dan Nisbah Mangkin", Prosiding Seminar, Simposium Kimia Analisis Kebangsaan Ke Empat, 4-6 Sept., 1990. UPM.
187. M.A. Yarmo, A. Alimuniar., R.A. Ghani, M.Z. Ab. Rahman, R.A. Rahman, K. Ismail dan N.N. Nik Ahmad. 1990. "Solution Blending of Natural Rubber/Vestemanar." Proceeding, The 3rd. JSPS-VCC, Seminar on Integrated Engineering, UM. KL. Part. C. 17-18, Dec. 1990.
188. Md. Jelas Haron dan Wan Md. Zin Wan Yunus. 1990. "Pengekstraan Asid Palmitik dengan Mangkin Heterogen". Prosiding Kimia Analisis Kebangsaan Ke IV. UPM. Serdang.
189. Md. Jelas Haron Wan Md. Zin Wan Yunus dan B.E. Law. 1990. "Pengasingan Beberapa Logam Dari Garam-garam Natrium dengan Penukar Ion Poli (Asid Hidroksamik). Prosiding Kimia Analisis Kebangsaan Ke IV. UPM. Serdang m.s. 705-713.
190. Mohd. Zaizi Desa, Wan Md. Zin Wan Yunus dan Serepah Redzah Ab Bakar. Pengekstrakan Pewarna Brilliant Yellow oleh Amberlite XAD-7. Prosiding Simposium Kimia Analisis Kebangsaan Keempat, 4-6 September 1990, UPM, m.s. 697-704.
191. Mohd. Aspollah Sukari, Haslinda Ismail dan Sarina Darus. 1990. Pencirian Triterpen Amirin Asetat Daripada Hasil Semulajadi, Pros. Seminar Kimia Analisis Kebangsaan Ke 4, UPM, 4-6 Sept. 1990.
192. Mohd. Aspollah Sukari, Haslinda Ismail dan Shozo Takahashi. 1990. Chemical Constituents of *Ocimum sanctum* L. and Its Biological Activity, Proc. 3rd. JSPS-VCC Seminar on Integrated Engineering, UM, 17-18., 1990.

193. Mohd. Aspollah Sukari dan Haslinda Ismail. 1991. Piscicidal Activity Evaluation of Some Tropical Plants, Abst. Regional Conference on Medicinal Products from Tropical Rain Forests, FRIM, 13-15 Mei 1991.
194. M. Rahmani, H.M. Ismail dan A.R. Manas. 1990. Alkaloids Constituents of Two Malaysian Medicinal Plants, Workshop on Carbohydrates and Carbohydrates Containing Natural Products, Univ. of Peradeniya, Sri Lanka, 11-17 July 1990.
195. Rahmani, M., Ismail, H.M. dan Leong, T.Y. 1990. Jatrophenolone A and Jatrophenone: two diterpenes from *J. Gossypifolia*, PERTANIKA, 13(3), 405.
196. Rahmani, M., Ismail, H.B.M. dan Matsunaga. 1991. Structural Determination of the Chemical Constituents of *Phyllanthus Watsonii*, Regional Conference on Medicinal Products from Tropical Rain Forest, Forest Research Institute of Malaysia, 13-15 May 1991.
197. Ahmad, F., dan Rahmani, M. 1991. The Alkaloids of *Glycosmis pentaphylla*, Regional Conference on Medicinal Products from Tropical Rain Forest, Forest Research Institute of Malaysia, 13-15 May 1991.
198. Takaoka, Y., Tanaka, R., Mizutaru, H., Ishihara, Y., Matsunaga, S., dan Rahmani, M. 1991. Chemical Constituents of a Malaysian Plant: *Phyllanthus watsonii*, The 111th Annual Meeting of the Pharmaceutical Society of Japan, Hachioji City (Tokyo), 26-28 March 1991.
199. Rahmani, M., Toia, R.F., Ismail, H.M., Manas, A.R. dan Takahashi, S. 1990. Lignans Constituents of Tropical Plants, The 3rd JSPS-VCC Seminar on Integrated Engineering, Universiti Malaya, 17-18 Dec 1990.
200. Rahmani, M., Manas, A.R., Bakar, S.A., dan Yaman, S.H. 1990. Spectroscopic Determination of Kadsuscandin, a New Lignan from *Kadsura Scanden* (Schizandraceae), The 4th Analytical Chemistry National Symposium, Universiti Pertanian Malaysia, 4-6 Sept. 1990.
201. Rahmani, M., Muhamad, A., Manas, A.R., Ismail, H.M., dan Jambari, A. 1990. Search for New Insecticides from Tropical Plants, The 7th National Seminar of the Natural Product Group, Universiti Sains Malaysia, 27-28 June 1990.
202. Rehan Nor dan B.H. Ooi. Konsep Mol dan kegunaannya dalam Pengiraan Stoikiometri dan Titrimetri. (Buku panduan dan latihan; telah diterima untuk diterbitkan oleh Penerbit UPM).
203. Rehan Nor. Masalah Pelajar Dalam Menamakan Sebatian-Sebatian Organik Berpolifungsi. (Telah dihantarkan ke Pertanian untuk diterbitkan).
204. Sidik bin Silong. 1990. "Kepelbagaian Geometri Struktur Kompleks Koordinatan Logam Yang Mempunyai Konfigurasi Elektron Separa-penuh atau Penuh". Simposium Kimia Analisis Kebangsaan Keempat, 4-6 Sept. 1990, UPM.
205. Wan Azelee Wan Abu Bakar dan Sidik silong. 1990. Proc. 3rd. JSPS-VCC Seminar on Integrated Engineering, Univ. Malaya, 17-18 Dis. 1990.
206. Wan Yunus, W.M.Z., Salleh, A.B., Ismail, A., Ampon, K., Basri, M. dan Razak, C.N.A. 1990. Immobilisation of Lipase onto Macroporous Poly(styrene) Beads. Kertas Kerja bagi Third JSPS-VCC Seminar on Integrated Engineering, Universiti Malayaa, Kuala Lumpur 17-18 Dec. 1990.
207. Wan Md. Zin Wan Yunus. 1990. Flow Injection Analysis Research Activities in Malaysia. Kertas Kerja dibentangkan di Flow Injection Analysis Workshop, Monash University, Australia, 3-7 Dis. 1990.
208. Wan Md. Zin Wan Yunus, Md. Jelas Haron dan L.H. Tan. 1990. "Pengekstrakan dan Pemisahan Aurum, Argentum, Ferum, Kuprum, Nickel, Kobalt dan Zink dengan Resin Penukar Ion Poli(Asid Hidroksamik)". Prosiding Kimia Analisis Kebangsaan Ke IV. UPM. Serdang, m.s. 283-289.
209. W.T. Tan, S.T. Ooi dan C.K. Lee. 1990. "Removal of Chromium (IV) by Coconut Husk and Palm Press Fibres". Pacific Basin Conference on Hazardous Waste Research. pg. 90030, Honolulu, Nov. 1990.
210. Z. Zulkarnain, H. Mohd. Zobir dan M. Badri. 1984. "Penyediaan dan Pencirian Arang Teraktif dari Kayu Bakau (*Rhizophora apiculata*)", Kertas Kerja di Simposium Kimia Analisis Kebangsaan Ke IV, 4-6 Sept. 1990.
211. Kamel Ariffin Mohd. Atan. 1990. "Satu Kaedah Menganggar Hasil Tambah Ekspenen Berganda". *Matematika*, Jld. 6, No. 1, pp: 37-48.

212. Ismail abdullah, Kamel Ariffin Mohd. Atan. 1990. "Penjanaan Grafik Polihedron Newton dan Gambarajah Penunjuk Sesuatu Polinomial Melalui Kompute". **Prosiding Simposium Kebangsaan Sains Matematik III** pp: 201-211.
213. Noor Akma Ibrahim. 1990. "Analisis regresi mudah bagi mengesan cerapan berpengaruh bagi data tertapis - penggunaan perisian SAS". **Technical Report**, Jabatan Matematik #34/1990.
214. Noor Akma Ibrahim. 1990. "Estimation parameters of Proportional Hazards model with censored data using SAS software". **Proceedings of 4th Annual SUM Conference**.
215. Peng Yee Hock. 1990. "On Edge-complementable graphs, **Journal of Physical Science**", Vol. 1(1)(1990) 1-5.
216. Azmi Jaafar. 1990. "Penggaggaran Teguh: Kaedah Norma L-1". **Laporan Teknik** Jabatan Matematik UPM No. 62/1990.
217. Kassim Haron. 1990. "J-optimal Designs in nonlinear Situation" - **SAINS MALAYSIANA**, 19, 1-10.
218. Fauziah Maarof. 1990. "Comparison of Treatment Means in a Split Plot Design". **Proceedings, SUM 4th Annual Conference**.
219. Leow Soo Kar. 1990. "Maximum Reliability for Combined Hardware-Software Fault-Tolerant Computer Systems". **Opsearch** Vol. 27, No. 1.
220. Malik Haji Abu Hassan. 1990. "Pengoptimuman Tak Berkekangan dengan FORTRAN". **Laporan Teknik**, Jabatan Matematik, UPM.
221. Fatimah Ahmad. 1990. "An approach to Control the Prototype Process". **Technical Report**, Dept. of Mathematics, UPM.
222. "User Satisfaction Approach: A Model to Control the Prototype Process". **Technical Report**, Dept. of Mathematics, UPM.
223. Ismail Mohd. 1990. "A Modification of Two Points Step Size Gradient Method of Unconstrained Optimization", **SAINS MALAYSIANA** 19(4), pp. 97-102.
224. Ismail Mohd. 1990. "Optimization on Travelling Salesman Problems", **MATEMATIKA**.
225. Ismail Mohd. 1990. "An Interval Global Optimization Algorithm for a Class of Functions with Several Variable, **J. of Computational and Applied Mathematics**", 31, pp. 373-382.
226. Ismail Mohd. 1990. "A Note on the Interval Arithmetic for Computing and Bounding the Real Zeros of Functions with one Variable" **J. of Asean Science and Technology for Development** 7(2).
227. Ismail Mohd. 1990. "**Theory and Application of Linear Programming**". Fourth year University Level, DBP.
228. Isa Daud. 1990. "Analisis regresi mudah bagi mengesan cerapan berpengaruh bagi data tertapis - Penggunaan SAS." **Teknikal Report** No. 45/1990.
229. Peng Yee Hock. 1991. "A note on triple separation of a graph, **Southeast Asian Mathematical Bulletin**", Vol. 15(2).
230. Noor Akma Ibrahim. 1990. "Simple Regression Analysis and Detection of Influential Observations in Censored Data Using SAS Software". **Proceedings of the SAS User Group International, 16th Annual Conference**.
231. Malik Haji Abu Hassan. 1991. "Perluasan Kedah Zubov kepada Sistem Berubah Masa", **Laporan Teknik** No. 63, Jabatan Matematik.
232. Prof. Dr. Mohamed Suleiman. 1991. Existence of Absolute Stability Region when Different Order Adams Methods Are Used to Solve A System of First Order ODEs, **Bull. Malaysian Math. Soc.** 14(1991), 15-19.
233. M.K. Yusoff, W.N. Azmin Sulaiman & Z. Sharif 1990. A General Survey of Nitrate-Nitrogen Levels in Well-Water Under Different Landuses. **Pertanika** 13(1), 79-83.
234. Anhar Suki, Mohd. Kamil Yusof, T.W. Kiong dan L.S. Kim. 1990. Final Report on the Use of Trickling Biofilter for the Treatment of Kimia Textile Wastewater. Report submitted to KIMA Sdn. Bhd.
235. Status Report No. 10 - UPM/PGSM Soil Erosion Protection Study. Report Submitted to PETRONAS Gas Sdn. Bhd.
236. Mohd. Kamil Yusoff. 1991. Pertimbangan Alam Sekitar: Kitaran Hidrologi, Kimia Hidrosfera, dan kualiti dan Pecemaran Air. Dibentangkan untuk kursus anjuran PERTONAS Gas. Sdn. Bhd., ILSAS, Bangi. 2 Januari 1991.

237. Mohd. Kamil Yusoff. 1991. Hubungan di antara faktor hidrometeorologi dengan perubahan kualiti air sungai di kawasan tadahan tanaman getah. Tesis Ph.D, Universiti Kebangsaan Malaysia.
238. Mohd. Kamil Yusoff, Wan Nor Azmin Sulaiman dan Mohd. Nasir Hassan. 1991. Draf Laporan Penilaian Kesan Alam Sekitar untuk Projek Penanaman Kesuma (*Bixa orellana*). Laporan dihantar kepada Syarikat Daya Hikmat Sdn. Bhd/Montrio Development Company Ltd.
239. Muhamad Awang, Anhar Suki dan Azman Z.A. 1990. Rainfall chemistry and Possible Impact on Agro-forest Species in Peninsular Malaysia. Proceedings: 3rd International Conference on Atmospheric Sciences and applications to air Quality, Shanghai, China, 15-19 October 1990.
240. Azman Z.A., M. Selamat and M. Awang. 1990. A Preliminary Observation of Nitrogen Dioxide Concentration in Selected Areas in the Klang Valley, Malaysia. Proceedings: 3rd International Conference on Atmospheric Sciences and Application to air quality, Shanghai, china, 15-19 October 1990.
241. Azman Zainal Abidin. 1990. The Presence of Airbone Polynuclear Aromatic Hydrocarbons in Kuala Lumpur. In: Berita Penyelidikan, UPM, No. 4, No. 3, September 1990. p. 2-3,7.
242. Azman Zainal Abidin dan Ramizah Hj. Hashim. 1991. Kesusutan Lapisan Ozon di Stratosfera. In: Seminar Kesihatan: Hakisan Lapisan Ozon, UPM, 13 February 1991.
243. Mohd. Ismail Yaziz. Status and Development of Formal and Non-Formal Environmental Education - Country Report: Malaysia. Paper presented at the "Consultation Meeting of the Development of International Network in Env. Education". Manila. Philippines, 4-8 Feb. 1991.
- 2744 Zelina Zaiton Ibrahim. Suspended Sediment Transport in the Klang River Estuary. Coastal Engineering in National Development. IEM/ICE Joint conference 1991. 4-6 March 1991.
245. A. Suki, Tan Wei Kiong dan Liew Siew Kim. "Treatment of Textile Wastewater Using Trickling Biofilter: Some Design Considerations, in jurutera Kimia Malaysia", pg 31-46. Vol. No. 1. Mac 1991.
246. A. Suki, Muhamad Awang dan Azman Zainal Abidin. "Control Water Quality and Mussel Culture at Strait of Johor (West)", submitted to Tropical Urban Ecosystem Vol. 8. 1990. In press.
247. Azman Z.A., M. Awang dan A. Suki, "The Air Quality of Coastal Johore - A Case in Pasir gudang", submitted to Tropical Urban Ecosystem vol. 8. 1990. In press.
248. A. Suki "Overview of Sewage Problems, Management and Control Technologies in Malaysia", presented at Industrial Biotechnology Group Meeting 11-12 Oct. 1990 at MARDI. Organised by Standard and Research Institute Malaysia.
249. A. Suki "Kualiti dan Pencemaran Air di Malaysia", (Water Quality and Pollution in Malaysia) to be published by UNESCO. 1991.
278. A Suki "Waste Minimization and Zero Discharge Potential in Malaysia". Presented at "International Workshop on Pollution and Low Waste Technologies", New Delhi 19-23 Nov. 1990. NPC (India), CDG (Germany).
250. A. Suki, Azni Idris dan Megat Johari MMN. "Performance of An Upflow Anaerobic Biofilter for Treatment of POME", 2nd. National Biotechnology Programme Seminar. 5-6 Science Technology and the Environment, Malaysia.
251. Muhamad Awang, . Suki dan Azman Z.A. 1990. "Rainfall Chemistry and Possible Impact on Agro-Forest Species in Peninsular Malaysia". Presented at 3rd International conference on Atmospheric Sciences and Application to Air Quality, Shanghai, China 15-19 Oct. 1990.
252. A. Suki dan Azman Z.A. "Air Quality Monitoring in the Among Industry", presented at "Seminar Perlindungan Sinaran Untuk Pengilang-Pengilang Bahan Galian Radioaktif", 22-23 Mei 1990, Kuala Lumpur. Organised by the Atomic Licencing Board, Prime Minister's Dept.
253. N. Sapari. "Pantai Timur Semenanjung Malaysia: Geomerfologi dan Kepekannya Terhadap Minyak", Prosiding Seminar Sains Bumi dan Masyarakat, UKM Bangi, pp 181-192, 9-10 Julai 1990.

254. N. Sapari. "The Role of Universiti Pertanian Malaysia in Promoting Preservation of the Environment", 6-8 Mei 1991, University Airlangga, Surabaya, Indonesia.
255. Samad, M.Y.A., Salleh, a.B., Razak, C.N.a., ampon, K., Yunus, W.M.Z. dan Basri, M. 1990. A lipase from a newly isolated thermophilic *Rhizopus rhizopodiformis*. World J. Microbiol. Biotechnol. 6, 390-394.
256. Salleh, A.B., Ampon, K., Salam, F., Was yunus, W.M.Z., Razak, C.N.A. dan Basri, M. 1990. Modification of lipase for reactions in organic solvents. Annals N.Y. Acad. Sci. 613, 521-522.
257. Ampon, K., Salleh, A.B., Salam, F., Wan Yunus, W. M.Z., Razak, C.N.A. dan Basri, M. 1991. Sugar esterification catalysed by alkylated trypsin in dimethylformamide. Biotechnol. Letters, 13(1), 25-30.
258. Basri, M., Salleh, A.B., Ampon, K., Salam, F., Wan Yunus, W.M.Z., Razak, C.N.A. 1990. Modification of lipase by ethylene glycol. Biocatalysis 4, 313-317.
259. Mahiran Basri, Abu Bakar Salleh, Kamaruzaman Ampon, Wan Md. Zin Wan Yunus, Che Nyonya A. Razak dan Mohd. Yusoff Abdul Samad. 1990. Studies on the purification of lipase by fast protein liquid chromatography (FPLC). Proc. Malaysian Biochemical Soc. Conf. 15: 159-161.
260. Basri, M., Ampon, K., Wan Yunus, W.M.Z., Salleh, a.B. dan Che Nyonya A. Razak. 1990. Kajian ke atas penggunaan turus penukar anion, mono-q HR 5/5 untuk penulenan lipase dengan menggunakan kromatografi cecair prestasi cepat. Proc. 4th. National Analytical Chemistry Symposium, Sept. 1990.
261. Wan Yunus, W.M.Z., Salleh, A.B., Ismail, A., Ampon, K., Basri, M., dan Razak, C.N.A. 1990. Immobilization of lipase on macroporous poly (styrene) Beads. JSPS Symposium, Kuala Lumpur, Nov. 1990.
262. Abu Bakar Salleh, Kamaruzaman Ampon, Mahiran Basri, Wan Md. Zin Wan Yunus, Che Nyonya A. Razak dan Aminah Ismail. 1990. Protein modification; a downstream approach. Symposium on Trends in Biotechnology in the Asia-Pacific region. July 31 - August 2, 1990.
263. Ampon, K., Salleh, A.B., Salam, F., Wan Yunus, W.M.Z., Nyonya Razak, C.N.A., Basri, M., 1991. Reductive alkylation of lipase. Enzyme Microbiol. Technol., 13- (In press).
264. Samad, M.Y., A.B. Salleh, C.N.A. Razak, K. Ampon, M. Basri dan W.M.Z., Wan Yunus. 1991. Lipase characterization from a newly isolated thermophilic fungus, *rhizopus rhizopodiformis*. Unesco National Workshop on Promotion of Microbiology in Malaysia. January 28-29, 1991, UPM.
265. Zainoba, Z., C.N.A. Razak, A.B. Salleh, K. Ampon, W.M.Z. Wan Yunus dan M. Basri. 1991. Immobilization of a lipase-producing bacteria. Unesco National Workshop on Promotion of Microbiology in Malaysia. January 28-29 1991, UPM.
266. Rosiah M., C.N.A. Razak, A.B. Salleh, K. Ampon, W.M.Z. Wan Yunus dan M. Basri. Effect of carbon and nitrogen sources on lipase production. Unesco National Workshop on Promotion of Microbiology in Malaysia. January 28-29 1991, UPM.
267. Norhayati, S., A.B. Salleh, C.N.A. Razak, K. Ampon, W.M.Z. Wan Yunus, dan M. Basri. Effect of carbon and nitrogen and substrate - related materials on the production of lipase by *Pseudomonas* sp. Unesco National Workshop on Promotion of Microbiology in Malaysia. Januari 28-29 1991, UPM.
268. Vijaya S. Kanapathipillai. 1990. Studies on the potential of Biological control of anthranose fungi, *colletotrichum* on Malaysian fruits. (Abstracts) Fourth International Mycological Congress, Regensburg, Germany (FRG).
269. Vijaya S. Kanapathipillai. 1990. Comparision of seed treatments, chemical and biological onthe mycoflora of some Malaysian vegetables. (Abstracts) Fourth International Mycological Congress, Regensburg, Germany (FRG).
270. Vijaya S. Kanapathipillai. 1990. Seed borne fungal flora of *Hibiscus esculentus* (Abstracts) 13th Malaysian Microbiology Symposium, Kuala Lumpur.
271. Vijaya S. Kanapathipillai. 1990. Use of *T. harizianum* against bean anthracnose fungus *C. lindemuthianum* (Sacc & Mang.) Bri. & Cav.

272. Muhamad Awang. 1990. Changes of photosynthetic and respiratory activities and of chlorophyll content in growing cocoa leaves. *Transection of Malaysian Plant Physiology Society*, Vol. 1.
273. Muhamad Awang and Ridzuan Halim. 1990. Physiological responses of tobacco (*Nicotiana tabacum* var. Bel W3 and Bel-B) to CO enrichment. *Transections of Malaysian Plant Physiology Society*, Vol. 1.
274. Muhamad Awang, S.A.S. Hassan, Mazlan Osman dan Sham Sani. 1990. Preliminary study on the effect of ultraviolet radiation and low light intensity of Muskmelon (*Cucumis melo*) *Mal Appl. Biology* 19(1), 37-45.
275. Mohd. Razi, I., Muhamad Awang dan Syed Razlan S.H. 1991. Effect of water stress on growth and physiological processes of *Averrho carambola*. Paper to be presented at Int. Symposium on Tropical Fruit Research, Thailand.
276. A. Suki, M. Awang. 1990. Oxidation pond and aerated lagoon. Paper presented at Seminar on Options for Sewage Treatments, 18 September 1990. Environmental Management and Research Association of Malaysia.
277. Azman, Z.A., Muhibbah, S. dan Muhamad Awang. 1990. A preliminary observation of nitrogen dioxide concentration in selected areas in the Klang Valley, Malaysia. *Proceedings of the 3rd International Conference on Atmospheric Sciences and Application to Air Quality*, Shanghai, Oct. 15-19, 1990.
278. Muhmad Awang, S.A.S. Hassan, Mazlan Osman dan Sham Sani. 1990. Preliminary study on the effect of ultraviolet radiation and low light intensity of Muskmelon (*Cucumis melo*) *Mal Appl. Biology* 19(1).
279. Muhamad Awang. 1990. Effects of sulphur dioxide (SO₂ on oil palm) (*Elaeis guineensis*) Jaq. seedlings. *Mal. Appl. Biology* 19(1).
280. M. Awang, R. Muamad dan S. Azelan. 1991. Growth respons of cocoa mirids (*Helopeltis theobromae*) to SO₂, NO₂ singly or in combination. *PERTANIKA* (In press).
281. M.I. Yaziz dan Muhamad Awang. Health Impacts of Growth Ecosystem - Increasing Awareness via Human Exposure Assessment Studies. Paper presented at the "Regional Workshop on Comparative Study of Metropolis Ecosystems in Asia and the Pacific". Seoul, Rep. of Korea. 5-8 Dec. 1990.

SEMINAR

1. The Role of Petroleum in Sustainable Development, Penang Mutiara Beach Resort, Penang 7-11 Januari 1991.
2. International Conference on Tropical Ozone and Atmospheric Change, 20-23rd Feb. 1990 Penang, Malaysia.
3. Seminar Kebangsaan Behubung dengan Persidangan Pertubuhan Bangsa-Bangsa Bersatu Mengenai alam Sekitar dan Pembangunan - anjuran Kementerian Luar Negeri dan Kementerian Sains Teknologi dan Alam Sekitar, 9-11 Julai 1990.
4. 3rd. International Conference on Atmospheric Sciences and its application to Air Quality, Shanghai, Oct. 1990.

FAKULTI PERIKANAN DAN SAINS SAMUDERA

DEKAN

Prof. Madya Dr. Mohd. Ibrahim Hj. Mohamed

KAKITANGAN

Jumlah Kakitangan

Jabatan	Kategori A	Kategori B	Kategori C	Kategori D
Pejabat Dekan	3	-	6	9
Jabatan Biologi Ikan	15	-	5	5
Jabatan Akuakultur	9	1	9	8
Jabatan Teknologi Menangkap Ikan	15	3	20	53
Jumlah	42	4	40	75
Jumlah Besar				161

Perlantikan Baru

Seramai 1 orang Pensyarah dan seorang Jurutaip telah dilantik.

Perletakan Jawatan

Seorang Jurutaip dan seorang Pembantu Am Rendah telah meletakkan jawatan.

Cuti Belajar

11 orang pensyarah telah menjalani Cuti Belajar manakala seorang telah menamatkan cuti belajar dan bertugas semula. (Semua Ph.D.).

Ijazah Lanjutan

Seramai 8 orang bagi kursus Ph.D. dan 10 orang bagi kursus M.S.

Pemeriksa Luar

1. Prof. Madya Dr. Ghazali Ismail
Jabatan Biologi
UKM Cawangan Sabah
38996 Kota Kinabalu
Sabah
2. Prof. Dr. Alie Poernomi T
Central Fisheries Research Institute
J1, K.S. Tubun
P.O. Box 50 slipi
Jakarta 11410A
Indonesia

PENYELIDIKAN

1. Development of an appropriate technology for optimization of aquacultural production: MPKSN 1-07-05-12; 1986-1990. (Ketua Projek).

2. Prawn Farming in Development Countries: development of an appropriate Technology for *Macrobrachium rosenbergii* (de Man) Production and Post-harvest Handling. EEC Project No. 63241. M\$412,000.00(1989-1992). (Ketua Peojek).
3. Kultur dan kajian biologi alga.
4. Coastal oceanographic studies in the South China Sea and the Straits of Malacca: Phase II (IRPA).
5. Water quality requirement for Udang Galah culture (EEC funding).
6. Marine sendiment pollution (Puspati).
7. Kajian awal "Immune response in *Aristichthys nobilis* infected with *Lernaea cyprinacea*". Bantuan IDRC bernilai \$100,000.
8. ASEAN Australia Cooperative Programme in Marine Science. Coral Reef Studies 1989-1994. Australian International Development Assistance Bureau funding. A\$250,000.
9. Development of a fishery information system. 1990-1993. IRPA funding \$60,000/yr.
10. Remote Sensing application on Coastal Zone Management of Malaysia. ASEAN-Australian program on coastal living resources - Funding AIDAB Australia. A\$70,000. 1989-1994.
11. Stock assessment of marine prawn in South Johore - ASEAN-USAID Project.

12. Identification and stock assessment of fishery resources in Malaysia waters -IRPA Project.
13. Pembiakan aruhan dan semaian ikan keli kayu.
14. Semaian ikan leee koh dalam tangki Bio-Fiziko-Kimia.
15. Semaian ikan keli Afrika dalam tangki Bio-Fiziko-Kimia.
16. Ternakan Larva udang galah dengan penggunaan kombinasi *Artemia* dan *Moina*.
17. Penubuhan Kultur Sel dari Ikan Siakap, *Lates calcarifer* dan keli *Clarisa batrachus* MPKSN (Tamat).
18. Kajian Status Agen Mikrob Patogenik dalam Ikan (Air tawar & masin), Kerang-kerangan dan Molluska di Malaysia Barat. I. Kajian Microbiologi: Virologi dan Bakteriologi MPKSN (sedang berjalan).
19. Fish Parasite (Malaysia) Phase III (IDRC Project). Identification of viruses present in fish imported into Malaysia and other commonly cultured species. (sedang berjalan).
20. Kajian sumber bentos di pesisiran pantai. Projek ASEAN-Australian - 1990/91.
21. Kajian zooplankton di kolam-kolam rekreasi. Projek penyelidikan IRPA - 1989/90.
22. Kajian Index Sensitiviti Persekitaan. Projek Perundingan PETRONAS/UPM - 1989/91.
23. Coastal and Near-shore Processes in Kuala Terengganu. 1991-1995 UPM.
24. One dimensional hydrodynamic model for Kuala Terengganu estuary. Funding \$6,000.00.
25. Penentuan keadaan untuk mengkultur tisu ovari udang laut, *Penaeus merguensis* in vitro.
26. Kajian vitellogenesis dalam tisu ovari *P. merguensis* dengan dan tanpa rawatan hormon steroid.
27. Study on some economic factors in "Unjam" and "Bubu" operations in Terengganu, Malaysia. 1990. Funding by Malaysia Lasmo Oil Sdn. Bhd. \$10,000.00.
28. A focus study on Deep-sea Purse seine operators of Kuala Terengganu - successful Fisherman. 1990.
29. Study on the use of light attraction on catches in Fish Traps. Funding by UPM. \$12,000. (On going research)
30. Modelling of Bioeconomic operation and Management in Deep-sea Marine Fisheries. Funding by National Scientific and Development Research council. \$100,000/yr. (On going research)
31. Studies on Plankton as Food Organisms for Larval Rearing - Chemical aspects.
32. Erosion processes at the Rantau Abang leather back rookery.
33. Tar ball pollution in the Rantau Abang leatherback rookery.
34. Hydrocarbon pollution in the Rantau Abang leatherback rookery and adjacent waters.
35. Tracking the movements of leatherback hatchling in their "swimming frenzy" to determine the developmental habitats of leatherback turtles.
36. Tracking the Internesting movements of green turtles using ultrasonic telemetry.
37. Studies on the ultrastructure of leatherback eggshells.
38. Ecology of marine fish larvae in the South China Sea.
39. Relationship between sea turtles and offshore platforms in Terengganu.
40. "Coastal & Nearshore processes at the State of Terengganu" MPKSN.
41. Coastal Oceanographic Studies in Port Dickson. MPKSN.
42. Bahan-bahan pencemar Samudera dan pengangkutan sedimen di Malaysia MPKSN/Unit Tenaga Nuklear.
43. Marine Contamination and Sediment Transport.

PENERBITAN

1. Mohd. Ibrahim Hj. Mohamed. 1990. Implementation of the Law of the Sea Convention in the 1990s: National Management of the Fisheries. Paper presented at the SEAPOL International Conference on the Implementation of the Law of the Sea Convention in the 1990's: Marine Environmental Protection and other issues. Denpasar (Bali) Indonesia May 28-30, 1990.
2. Mohd. Ibrahim Hj. Mohamed. 1990. Marine Environment Development Issues and

Responses. Paper presented at the National Seminar on the United Nation's Conference on the environment and development. Kuala Lumpur 9-11 July, 1990.

3. Mohd. Ibrahim Hj. Mohamed. 1991. National Management of Malaysia Fisheries. Marine Policy. 15(1): 2-15.

4. Mohd. Ibrahim Hj. Mohamed. 1991. Challenges for Higher Education for Fishing Technology. Paper presented at the Conference on Fixing Technology. Marine Fisheries in the Nineties:- Higher Productivity Through Improved Technology. 10-11 March 1991. Kuala Terengganu, Malaysia.

5. Law, A.T. and Azahar Othman. 1990. Sewage pollution in the Coastal waters off Port Dickson, Straits of Malacca. *Pertanika* 13(3): 375-380.

6. Law, A.T., V. Ravinthar dan C.H. Yeong. 1990. Oil pollution in the coastal waters off Port Dickson, Straits of Malacca. *Pertanika* 13(30): 381-387.

7. Chin, K.S.S., S.H. Cheah, K.J. Ang dan A.T. Law. 1990. Nursing the giant freshwater prawn in floating net cages. Paper presented at the Simposium Biologi Gunaan Malaysia Pertama: Penyelidikan semasa dalam biologi gunaan. 27-28 Februari 1990, Serdang.

8. Noor Azhar Mohamed Shazili, Law Ah Theem, Liew Hock Chark, Mohd. Nasir Saadon and Che Abd. Rahim Mohamed. 1990. Impact study of the marine environment off an EPMI industrial plant in Kerteh, Terengganu, Malaysia. Final report to ESSO. 117 pp.

9. Law, A.T. 1990. Chemical nutrients and petroleum hydrocarbons in the coastal waters off the ESSO crude oil terminal at Kerteh, Terengganu. IN: Impact study of the marine environment off an EPMI industrial plant in Kerteh, Terengganu, Malaysia. Noor Azhar Mohamed Shazili et. al (eds.). Final report to ESSO. p. 11-35.

10. Law, A.T. 1990. Phosphorus and inorganic nitrogen distribution in the coastal waters off Sabah. IN: *Ekspedisi Matahari 89: A study on the offshore waters of the Malaysian EEZ*. Abu Khair Mohamed Mohsin, Mohd. Zaki Mohd. Said and Mohd. Ibrahim Hj. Mohamed (eds.). Faculty of Fisheries and Marine Science, Universiti Pertanian Malaysia, Occasional Publication No. 9. 1990 p. 65-73.

11. Law, A.T. 1990. Petroleum hydrocarbon distribution in the coastal waters off Sabah. IN: *Ekspedisi Matahari 89: A study on the offshore waters of the EEZ*. Abu Khair Mohamed Mohsin, Mohd. Zaki Mohd. Said and Mohd. Ibrahim Hj. Mohamed (eds.). Faculty of Fisheries and Marine Science, Universiti Pertanian Malaysia, Occasional Publication No. 9. 1990 p. 57-61.

12. Law, A.T. dan A. Singh. 1991. Relationship between heavy metal contents and body weight of fishes collected from Kelang estuary, Malaysia. *Mar. Pollut. Bull.* 32: 86-89.

13. Ang Kok Jee dan Law Yean Kok. 1990. Fecundity changes in *Macrobrachium rosenbergii* during egg incubation. *Aquaculture and Fish. Managt.* 22, 1-6.

14. Ang, K.J., Cheah, S.H. dan S. Yamazaki. 1990. Large-Scale Production of *Macrobrachium rosenbergii* Post-larvae in a new Bio-stream Culture Tank System. IN: *Advances in Fisheries and Marine Sciences*. (ed.) Mohd. Ibrahim Hj. Mohamed, Patimah Ismail, A.T. Law and S.H. Cheah. Faculty of Fisheries and Marine Sciences, Universiti Pertanian Malaysia. p. 22-31.

15. Khan, M.S., M.A. Ambak, K.J. Ang dan A.K.M. Mohsin. 1990. Physical, chemical and plankton studies of a lowland tropical hydroelectric reservoir, Tasek Chenderoh, Malaysia. *Malays. Appl. Biol.* 19(1): 109-112.

16. Khan, M.S., M.A., Ambak, K.J. Ang, dan A.K.M. Mohsin. 1990. Reproductive biology of a tropical catfish, *Mystus nemurus* C & V in Chenderoh Reservoir, Malaysia. *Aquaculture and Fish. Managt.*

17. Khan, M.S., K.J. Ang dan Y.K. Law. 1990. Biotechnology in fish breeding: Its potentials for Malaysian freshwater fisheries. *Option*, 5(2): 12-13.

18. Siraj, S.S., S.H. Cheah, P.T. Arumugam dan K.J. Ang. 1990. Preliminary observation on the growth and survival of *Clarias batrachus* Linnaeus fry maintained on prepared diets. IN: Mohd. Ibrahim H.M., P. Ismail, A.T. Law and S.H. Cheah (eds.) *Advances in Fisheries and Marine Sciences*. p. 73-79.

19. Siraj, S.S., S.H. Cheah, C.R. Saad and K.J. Ang. 1990. Fry rearing of walking catfish, *Clarias batrachus* Linnaeus with diets con-

- taining chicken eggs enriched with fish meal. Presented at the First Symp. Malays. Appl. Biol. 27-28 Februari 1990. Universiti Pertanian Malaysia, Serdang, Malaysia.
20. Cheah, S.H., S.S. Siraj dan K.J. Ang. 1990. A preliminary study on induced spawning of *Clarias batrachus* (Linnaeus) in Malaysia. *Pertanika* 13(1): 63-66.
 21. Cheah, S.H., S.S. Siraj, N.A. Salim dan K.J. Ang. 1990. Further studies on induced spawning of the catfish *Clarias batrachus* (Linnaeus) in Malaysia. Presented at the First Symp. Malays. Appl. Biol. 27-28 February, 1990. Universiti Pertanian Malaysia, Serdang, Malaysia.
 22. Anderson, I.G., G. Nash dan M. Shariff. 1990. Mass mortalities in giant prawn *Macrobrachium rosenbergii* de man, cultured in Malaysia modified static "green water" systems. *Journal of Fish Diseases* 13, 127-134.
 23. Torres J.L., M. Shariff dan A.T. Law. 1990. Identification and virulence screening of *Aeromonas* spp. isolated from healthy and epizootic ulcerative syndrome (EUS) - infected fish. pp 663-666. In Hirano. R and I. Hanyu (eds.) The Second Asian Fisheries Forum, Tokyo, April 17-22 1989. Asian Fisheries Society, Manila, Philippines.
 24. Shariff M. dan C. Sommerville. 1990. Comparative morphology of the adult of *L. polymorpha* Yu and *L. cyprinacea* Linnaeus. pp 717-720. In Hirano. R. and I. Hanyu (eds.) The Second Asian Fisheries Forum, Tokyo, April 17-22 1989. Asian Fisheries Society, Manila, Philippines.
 25. Shamudin M.N., Tajima K., T. Kimura, Shariff M. dan I.G. Anderson. 1990. Characterization of the causative organism of ornamental fish mycobacteriosis in Malaysia. *Fish Pathology* 25: 1-6.
 26. Anderson I.G., Law A.T., Shariff M., Nash G. 1990. A parvo-like virus in the giant freshwater prawn, *Macrobrachium rosenbergii*. *Journal of Invertebrata Pathology* 55: 447-449.
 27. Woo P.T.K., dan M. Shariff. 1990. *Lernaea cyprinacea* L. (Copepoda: Caligidea) in *Helostoma temminckii* Cuvier & Valenciennes: the dynamics of resistance in recovered and naive fish. *Journal of Fish Diseases* 13, 485-493.
 28. Shariff M., dan r. Subasinghe. 1990. Health aspects of Asian aquaculture. *IN-FOFISH International* 5: 35-38.
 29. Arthur R., dan M. shariff. 1991. Towards International Fish Disease Control in Southeast Asia. *INFOFISH International* 3: 45-48.
 30. Mohd. Zaki, M.S., A.K.M. Mohsin, M.A. Ambak dan S. Hayase. 1990. An Evaluation of the effect of trawling on demersal stock in the east coast Peninsular Malaysia. *Proceeding of the JICA/FPSS (UPM) Seminar - Advances in fisheries and Marine Sciences*, 10-11 March, 1990 p. 86-106.
 31. Mohd. Azmi A., A.K.M. Mohsin dan M.S. Mohd. Zaki. 1990. The dynamics of coastal pelagic fishes off the east coast Peninsular Malaysia. *Proceeding of the JICA/FPSS (UPM) seminar - Advances in Fisheries and Marine Sciences*, 10-11 March, 1990, p. 192-198.
 32. Mohd. Zaki M.S., M.A. Ambak dan A.K.M. Mohsin. 1990. Threadfin catch during an exploratory survey off Terengganu Coast. *Proceeding of the JICA/FPSS (UPM) seminar - Advances in Fisheries and Marine Sciences*, 10-11 March, 1990, p. 199-205.
 33. Mohd. Zaki M.S., A.K.M. Mohsin dan M.a. Ambak. 1990. Colour patterns as an additional aid to the identification of *Nemipterus* species, *Pertanika* 13(1): 17-26.
 34. Cheah, S.H., S.Y. Lam dan K.J. Ang. 1991. Preliminary report on induced spawning of the marble goby, *Oxyeleotris marmoratus*, in Malaysia. *Proc. 14th Ann. MSAP*: 111-114.
 35. Tan, H.L., K.J. Ang dan S.H. Cheah. 1991. Some aspects of the breeding biology of discus, *Symphysodon aequifasciata axelrodi*. Preprint: *Aquarama* 91. 27-30 June 1991, World Trade Centre, Singapore.
 36. Arshad, A. 1990. *Rahsia Laut: Invertebrat I*. Dewan Pelajar, Sept. 1990: pp. 8-9.
 37. Arshad, A. 1990. *Rahsia Laut: Invertebrat II*. Dewan Pelajar, Oktober, 1990: pp 8-9.
 38. Arshad, A. 1991. Beberapa Aspek Biologi Udang Galah. Kursus pendek ternakan udang galah, FPSS, UPM. 3-8 Jun, 1991.
 39. Saadon, M.N., Liew H.C. dan M. Hidaka. 1990. Temperature and Salinity Profiled in Sabah Waters. In: *Ekspedisi Matahari '89*. Mohsin A.K.M. dan Mohd.

- Ibrahim (eds.). Faculty of Fisheries and Marine Science, Universiti Pertanian Malaysia. Occasional Publication No. 9: 35-45.
40. Saadon, M.N., Liew H.C. dan M. Hidaka. 1990. Density (σ_t) and Dissolved oxygen profiles in Sabah waters. In: Ekspedisi Matahari '89. Mohsin A.K.M. dan Mohd. Ibrahim (eds.). Faculty of Fisheries and Marine Science, Universiti Pertanian Malaysia. Occasional Publication No. 9: 47-56.
41. Saadon, M.N. 1990. Meteorological conditions during the Ekspedisi Matahari '89. Mohsin A.K.M. dan Mohd. Ibrahim (eds.). Faculty of Fisheries and Marine Science, Universiti Pertanian Malaysia. Occasional Publication No. 9: 11-20.
42. Saadon, M.N. 1990. Sea surface and air temperature in the South China Sea. In: Ekspedisi Matahari '89. Mohsin A.K.M. dan Mohd. Ibrahim (eds.). Faculty of Fisheries and Marine Science, Universiti Pertanian Malaysia. Occasional Publication No. 9: 25-34.
43. Saadon, M.N. dan Rosnan Yaacob. 1990. Tidal Current in Kuala Terengganu Coastal Waters. Paper presented in the Third National Workshop on Tides, 11-12.7.90. Merlin Hotel, Pulau Pinang.
44. Saadon, M.N. dan Rosnan Yaacob. 1990. The relationship of Tide and Wind to the Coastal Water Movements of Kuala Terengganu. In: Proceeding of IEM/ICE Joint Conference 1991 - Coastal Engineering in National Development 4-6 March 1991 Kuala Lumpur, Malaysia. pp 15.
45. Chan H.H., 1991. "Effects of Eyestalk Ablation, Thoracic Ganglion Extract and Gonad Extract from "spent" spawners on ovarian maturation in pond-reared prawns, *Penaeus monodon* Fabricius". MS submitted and accepted by Aquaculture and Fisheries Management.
46. Rosnan Yaacob dan Saadon, M.N. 1991. Beach and Nearshore sediment Distribution of Kuala Terengganu. In: Proceeding of IEM/ICE Joint Conference 1991 - Coastal Engineering in National Development. 4-6 March 1991, Kuala Lumpur, Malaysia. pp. 15.
47. Mohd. Ibrahim, Abdul Rahim, Saharudin Hamid. 1990. Study on Some Economic Factors in "Unjam" and "Bubu" Operations in Kuala Terengganu. Consultancy report submitted to Malaysian International Chamber of Commerce and Industry.
48. Sharuddin Hamid dan Mohammed Muda. 1990. Kegigihan seorang Nelayan Pukat Jerut - Satu Fokus. Paper presented in First conference on fishing Technology, Kuala Terengganu.
49. A simple Method for the Determination of Volatile Amines In Sediment and Water Samples. M. Kamil Abdul Rashid, John P. Riley, Mark F. Fitzsimons dan George A. Wolff. Anal. Chir. Acta. In Progress.
50. Chan, E.H., S.A. Eckert, H.C. Liew dan K.L. Exkert (in press). Locating the interesting habitats of leatherback turtles (*Dermochelys coriacea*) In Malaysian waters using radiotelemetry. Proc. Eleventh International Symposium on Biotelemetry, 29 Aug - Sept. 1990, Yokohama, Japan.
51. Chan, E.H. (In press). The status and conservation of sea turtles in Malaysia., Proc. symposium on the State of Nature Conservation in Malaysia, 24-26 Aug. 1990, Kuala Lumpur, Malaysia.
52. Chan, E.H. dan H.C. Liew (In press). The offshore protection of Malaysian leatherback turtles. Proc. 12th. Annual Seminar, Malaysian Society of Marine Sciences, 18 Nov. 1989, Universiti Malaya, Kuala Lumpur.
53. Chan, E.H. (In press). Educational materials on sea turtles produced by the Sea Turtle Research and Conservation Project, Universiti Pertanian Malaysia. Proc. 12th Annual Seminar, Malaysian Society Sciences, 18 Nov. 1989, Universiti Malaya, Kuala Lumpur.
54. Eckert, S.A. H.C. Liew, K.L. Eckert, dan E.H. Chan. 1990. Shallow-water diving by gravid leatherbacks in the South China Sea. Proc. of the Tenth Annual Workshop of Sea Turtle Biology and Conservation, 20-24 February, 1990, South Carolina, U.S.A. (In press).
55. Rosnan Yaacob dan Saadon, M.N. 1991. Beach And Nearshore Sediment Distribution of Kuala Terengganu, Proc. Int. joint IEM/ICE conf. on Coastal Engineering In National Development, Kuala Lumpur.
56. Saadon M.N. dan Rosnan Yaacob. 1991. The Relationship of Tides and Wind to

the Coastal Water Movement of Kuala Terengganu. Proc. Int. Joint IEM/ICE conf. on Coastal Engineering In National Development, Kuala Lumpur.

57. Rosnan Yaacob. 1990. The organic carbon content of the Sediment in the South China Sea Off Sabah. In Ekspedisi Matahari '89. A Study on the Offshore Water of the Malaysian EEZ. A.K.M. Mohsin, Mohd. Zaki Mohd. Said and Mohd. Ibrahim Hj. Mohammed (eds.) Faculty of Fisheries and

Marine Science, Universiti Pertanian Malaysia, Occasional Publication No. 9.

58. Rosnan Yaacob dan S. Higashikawa. 1990. Bottom Sediment in the South China Sea Off Sabah. In Ekspedisi Matahari 185. A Study on the Offshore Waters of the Malaysian EEZ. A.K.M. Mohsin, Mohd. Zaki Mohd Said and Mohd. Ibrahim Hj. Mohammed (eds.) Faculty of Fisheries and Marine Science, Universiti Pertanian Malaysia, Occasional Publication No. 9.

FAKULTI SAINS MAKANAN DAN BIOTEKNOLOGI

DEKAN

Prof. Dr. Mohamed Mahyuddin Mohd. Dahan

KAKITANGAN

Jumlah Kakitangan

JABATAN	KATEGORI A	KATEGORI B	KATEGORI C	KATEGORI D
Pejabat Dekan	3	-	4	7
Jabatan Sains Makanan	12	-	10	5
Jabatan Teknologi Makanan	12	-	9	5
Jabatan Bioteknologi	13	-	5	4
Jumlah	40	-	28	21
Jumlah Besar	89			

Perlantikan baru dan Kenaikan Pangkat

1. Dr. Mohd. Nasir Azudin dilantik sebagai Timbalan Dekan Fakulti Sains Makanan dan Bioteknologi mulai 1.11.90.
2. Encik Zainal Abidin Abu Hassan dilantik sebagai Pembantu Makmal Kanan mulai 1.10.90.

Cuti Belajar

1. Suhaimi Mohd. Napis, tutor, masih mengikuti kursus Ph.D. dalam bidang Plant Molecular Biology, di University of Durham, U.K.
2. Noor Aini Abdul Rashid, tutor, masih mengikuti kursus Ph.D. dalam bidang Gene Cloning in Yeast (Genetic Engineering) di University of Durham, U.K. mulai Januari 1988.
3. Russly Ab. Rahman, Pensyarah, masih mengikuti kursus Ph.D. dalam bidang Pembungkusan Makanan di University of Reading U.K. mulai 25.9.88.
4. Dxulkifly Mat Hashim, Pensyarah, masih mengikuti kursus Ph.D. dalam bidang Kejuruteaan Makanan di University of Nottingham U.K. mulai 1.6.90.
5. Fatimah abu Bakar, Pensyarah, baru mengikuti kursus Ph.D. dalam bidang Mikrobiologi Makanan di UPM mulai 10.12.90.

PERKARA AKADEMIK

Ijazah Lanjutan

Jumlah pelajar Ijazah Lanjutan bagi sesi 1990/91 iaitu seramai 34 orang iaitu 4 mengikuti program Ph.D. dan 30 orang mengikuti program M.S. didalam pelbagai bidang.

Pemeriksa Luar

Prof. Lowell d. Satterlee daripada Pennsylvania State University telah dilantik sebagai pemeriksa dan penilai luar bagi pelajar-pelajar ijazah program Bachelior Sains & Teknologi Makanan sesi 1990/91 di Fakulti ini. Beliau telah berada di Fakulti ini selama 8 hari mulai 7.4.91 hingga 14.4.91. Antara aktiviti yang dijalankan ialah mengadakan ujian lisan bagi pelajar tahun akhir BSTM juga mengadakan pertemuan dengan Dekan, Pensyarah-pensyarah FSMB dan Naib Canselor UPM.

PENYELIDIKAN

1. Dr. Abdullah Abu Bakar: Pengendalian dan pengangkutan ikan hidup.
2. Dr. Abdullah Abu Bakar: Pencirian dan pengurangan bau lumpur didalam ikan.
3. Dr. Abdullah Abu Bakar: Peningkatan mutu keropok ikan.
4. Dr. Yu Swee Yean: Pengelauran Biskut daripada Ikan Selayang.
5. Dr. Yu Swee Yean: Peranan Katepsin dalam perubahan tekstur pada ikan airtawar semasa kemerosotan.

6. Dr. Yu Swee Yean: Kajian kestabilan ke atas penyimpanan adunan ikan sejukbeku (surimi).
7. Dr. Yu Swee Yean: Kajian enzim dari *A. melleus*.
8. Dr. Yu Swee Yean: Kesan jenis kanji atas kualiti Bebola/kek ikan.
9. Dr. Yu Swee Yean: Penggunaan kanji prapenggelatinan dalam pemprosesan keropok.
10. Dr. Yaakob b. Che Man: Development, Nutritional Value and Acceptability of Yellow Noodles Fortified with Acid Treated Soyabeans.
11. Dr. Yaakob b. Che Man: Process Improvement for Coconut Oil Extraction.
12. Dr. Yaakob b. Che Man: Processing of Fruit Leathers.
13. Dr. Yaakob b. Che Man: Studies on TG in Palm Olein with Special Reference to Cloud Point Behaviour.
14. Dr. Yaakob b. Che Man: Physico-chemical characteristics of Palm Oil Blends.
15. Salmah Yusof: Application of enzymes in fruit juice processing.
16. Salmah Yusof: Processing of cocoa juice, cocoa jam and jelly.
17. Salmah Yusof: Postharvest technology of fruits - bananas c.v. berangan.
18. Dr. Zaliha Christine Alang: In vitro propagation and conservation of sago palm. IRPA RML.
19. Dr. Zaliha Christine Alang: Mass propagation of underexploited tropical species. MPKSN \$20,000.
20. Dr. Zaliha Christine Alang: Kajian awal sagu dan kanju sagu. Kementerian Kemajuan Perindustrian, Sarawak. \$36,000.
21. Dr. Zaliha Christine Alang: Improvement of tropical crops through recombinant DNA technology. IRPA jangka pendek. \$35,000.
22. Dr. Zaliha Christine Alang: In vitro propagation of tropical fruit trees and under-utilized palms. Azmi, A.R. and alang. Z.C. IRPA RME.
23. Dr. Zaliha Christine Alang: Crop genetic transformation using *Agrobacterium* as vector IRPA RME/JICA. Alang Z.C.
24. Dr. Zaliha Christine Alang: Restriction mapping and enzyme electrophoresis of underutilized economic plants. Norehan, M.S, suhaimi, N. and Alang, Z.C. IRPA RME.
25. Dr. Zaliha Christine Alang: Development of mass propagation systems using bioreactor technology Alang Z.C. and Abd. Manaf, A. IRPA RME.
26. Dr. Zaliha Christine Alang: Regeneration in relation to genetic transformation. Alang, Z.C. and Halim, H. MPKSN RME.
27. Dr. Zaliha Christine Alang: Propagation and improvement of sago palm through in vitro techniques. Kementerian Kemajuan Perindustrian Sarawak. Alang, Z.C.
28. Dr. Hasanah Mohd. Ghazali: Screening of indigenous lipolytic microorganisms (particularly yeasts) including those that are thermophilic.
29. Dr. Hasanah Mohd. Ghazali: Immobilisation of enzymes (lipases) and cells (microbial and plants).
30. Dr. Hasanah Mohd. Ghazali: Catalysis in organic solvents (including reversed micelles).
31. Dr. Hasanah Mohd. Ghazali: Applications of lipases for the biomodification of palm oils (hydrolysis, transesterification).
32. Dr. Hasanah Mohd. Ghazali: Food colours - blue and red pigments (Kod 1-07-05-087, 2-07-05-011)
33. Dr. Hasanah Mohd. Ghazali: Phytosterols - stigmasterol and B-sitosterol (from *Parkia speciosa* - petai)
34. Dr. Hasanah Mohd. Ghazali: Triglyceride separation and identification (e.g. cocoa butter)(Kod 2-07-05-022).

PENERBITAN

1. Abdullah Abu Bakar. 1990. 'Processing and preservation of protein - a rich food in Malaysia'. Kertas kerja di seminar 1990 Obihiro Asia and the Pacific Seminar on Education for Rural Development 17-29 September, Obihiro University, Japan.
2. Abdullah Abu Bakar, Dzulkifly Mat Hashim dan M. Hotta. 1990. Some Considerations in the Production of Smoked Fish. Malaysian Fisheries Society Occasional Publication No. 3. pp 79-84.

3. Yu, S.Y. & Tan, L.K. 1990. Acceptability of crackers ('keropok') with fish protein hydrolysate. *International J. of Food Science and Tech.* (u.K.) 25, p. 204-208. Diterbitkan untuk Institut sains dan Teknologi Makanan, U.K. oleh Blackwell Scientific Publications.
4. Yu, S.Y. 1990. "Effect of fish: flour ratio or fish crackers ('keropok')." *ASEAN Food Journal* 6, No. 1 p. 36. diterbitkan oleh AFHB, Kuala Lumpur.
5. Yu, S.Y. 1990. Fish Crackers ('keropok') made from different Types of Flour. Akan diterbitkan dalam *ASEAN Food J.*
6. Yu, S.Y., Ngu, M.T.I. & Bakar, a. 1990. Cryoprotective effects of Sucrose, sorbitol & Phosphates and N.Toler Surim.
7. Yu, S.Y. 1990. Fish Noodles - Proc. 7th Session IPFC Fishery Commission Working Party of Fish Tech. & Marketing. FAO Fisheries Report No. 401 Supplement, Rome. p. 224-230. Diterbitkan oleh FAO, Rome.
8. Yu, S.Y. & Tan, L.K. 1990. Characteristics of Fish Hydrolysate from *O. mossambicus*, Rujukan seperti dalam (1) p. 231-237.
9. Bakar, A.A., Yu, S.Y. & Kayama, M. 1991. Fresh fish Quality Deterioration and Its Control. Dibentangkan dalam konf. Marine Fisheries in the '90's - Higher Productivity Through Improved Technology. K. Terengganu 10-11 Mac, 1991. Anjuran Persatuan Perikanan Malaysia, L.K.I.M. & Fakulti Perikanan dan Sains Samudera, UPM.
10. Bakar, J. Yu, S.Y. & Bakar, A. 1991. Role of Cathepsin D during Frozen Storage of *A. nobilis*. Akan dibentangkan dalam Konferensi 'Quality Control in the Fish Industry' Copenhagen, Denmark, 26-29 Ogos 1991. Anjuran Technological, Lyngby, Denmark.
11. Dr. Yaacob b. Che Man. Control of Off-flavour in Soybean by pH Adjustment. *ASEAN Food J.* (Review No. 164 - 28 Feb. 1991).
12. Dr. Yaacob b. Che Man. Effects of soaking Soybeans in Dilute acids on Biologically Active Components. *J. Am. Oil Chem. Soc.* (Review No. J6216 - 29 April 1991).
13. Dr. Yaacob b. Che Man. Isolation, Purification and Characterization of PE from Papaya Fruit. *J. Sc. Food & Agr.*
14. Dr. Yaacob b. Che Man. Acetic Acid Treatment of Coconut Cream in Coconut Oil Extraction. *ASEAN Food J.* (Review No. 194 - 30 May 1991).
15. Dr. Yaacob b. Che Man. Storage Stability of Ciku Leather. *ASEAN Food J.* (Review No. 196 - 29 May 1991).
16. Dr. Yaacob b. Che Man. Development and Evaluation of Four Different High-protein Low-cost Rice-soy Snack Formulations. *Inter. J. Food Sc. & Tech.* (Review No. IJFST 2389 - 2 April 1991).
17. Salamah Yusof. Guava - The Fruit and its Importance - to be published in the *Encyclopaedia of Food Science, Food Technology and Nutrition*.
18. Salamah Yusof. Effect of Mechanical Injury on the Post-harvest Physiology of Bananas presented at the International Symposium on tropical fruits in Pattaya, Thailand 20-24 May, 1991.
19. Salamah Yusof. Differences in the Physical and Chemical Characteristics of Guavas (Vietnamese and Beaumont) Related to Processing - Seminar Advances Food Research III, November, 1990.
20. A. Arbakariya, B. Ali Asbi and R. Norjehan. 1990. "Rheological behaviour of sago starch during liquefaction and saccharification". *Annals N.Y. Academy of Sciences*, 613: 610-613.
21. Y.B. Che Man, Asbi b. Ali, dan R. Abdul Rahman. 1990. "Pembaharuan proses untuk Membuat Fucuk". *Berita Penyelidikan, Universiti Pertanian Malaysia*, 4(1):6.
22. B. ali Asbi. "Soy Proteins and Products for Food Use". Conference on Soybeans in South-East Asia, Phytelphas, Le Havre, France, March 5-6th 1990.
23. B. Ali Asbi, L.S. Wei dan M.P. Steinberg. "Inhibition Kinetics of Soybean Lipoxxygenase-1". 51st annual Meeting of Institute of Food Technologists (IFT), Los Angeles, USA, June 17-20, 1990. IFT Program & Abstracts.
24. Rahimah M., a. Ariff dan B. Ali Asbi. "The Effect of Impeller Size on Bioconversion of Sago Starch to Glucose in a Stirred Tank Reactor", *Proceedings Trends in Biotechnology in the Asia-Pacific Region*, UPM, 31 July - 2nd August 1990.

25. Asbi, B. Ali. "Optimization of heat transfer in a cabinet drier". Abstract #1569, 7th International Drying Symposium, Prague, Czechoslovakia, August 26-30, 1990.
26. B. Ali Asbi dan A.W. Puziah. "Changes in Canned Guava Juice During Storage". Proceedings in Seminar in "Advances in Food Research II", PPPL, UPM Serdang, November 19-20, 1990.
27. S. Ishak, B. Ali Asbi, Y. Salmah dan S. Jinap. "Thermostability of Pectinesterase in Guave Juice". Proceedings in Seminar in "Advances in Food Research III", PPPL, UPM, Serdang, November 19-20, 1990.
28. F. Ashraf, B. Ali Asbi, M.G., Hasanah, C.M. Yaakob, dan S. Jinap. "Isolation and Purification of Pectinesterase from Papaya". Proceedings in Seminar in "Advances in Food Research III", PPPL, UPM, Serdang, November 19-20, 1990.
29. Suhardiyono, Y.B. Che Man, B. Ali Asbi dan M.N. Azudin. "Coconut Oil Extraction Using Acetic Acid". Proceedings in Seminar in "Advances in Food Research III", PPPL, UPM, Serdang, November 19-20, 1990.
30. M.N.A. Karim dan B. Ali Asbi. 1990. "Product Development Potential from Some Exotic Fruits: Ciku, Guava and Papaya", Presented at "Forum on Marketing of Fresh Fruits and the Fruit Processing Industry", FAMA, Subang Jaya, November 26-27.
31. B.A. Asbi, L.S. Wei dan N. Yamashita. 1990. "Effect of Acid Inactivation of Lipoyxygenase in Whole Soybeans on Water Binding Properties of Soy Proteins". Paper #219A, 52nd Annual Meeting of Institute of Food Technologists (IFT), Dallas, TX, USA, June 2-5.
32. B. Ali Asbi dan S. Ishak. 1991. "Evaluation of Thermal Process for Guava-Juice". Paper # 199, 52nd Annual Meeting of Institute of Food Technologists (IFT), Dallas, TX, USA, June 2-5.
33. Yazid, A.M. dan R.J.M. Crawfords. 1990. Thermization as a means to extend the storage life of raw milkm. Proc. IDF/FIL Conference, 'Dairying in a changing world'. 8-12 October, 1990, Montreal, Canada.
34. Sipat A., Lajis M.N., Yazid A.M. dan Ibrahim F. 1990. Biochemical study on the use of the extract of Kesinai Plant for Making Dadih. Proc. Cong. Vet. Assoc. p. 71-73. 6-10 October, 1990, Kuala Lumpur.
35. Sipat A., Lajis M.N., Yazid A.M. dan Ibrahim F. 1990. The Use of Kesinai Extract to Coagulate Milk. Proc. JSPS-VCC 3rd Seminar 'Integrated Engineering'. 17-18 December, 1990. Universiti Malaya, Kuala Lumpur.
36. Sipat A., Lajis M.N., Yazid A.M. dan Ibrahim F. 1990. Purification and Characterization of Kesinai Extract - A Milk Coagulating Enzyme of Plant Origin. Submitted for publication in the Journal of Dairy Research (United Kingdom).
37. Yazid A. M. dan R.J.M. Crawfords. 1989. The Effect of Thermization on milk and its properties. Proc. MIFT/UPM Seminar 'Food Processing-Issues and Prospects' p. 72-80. Kuala Lumpur.
38. Yazid A.M., Sipat A, Lajis M.N. dan Ibrahim F. 1991. Coagulation of Milk Using *Streblus asper* Extract. Proc. International Seminar FIL-IDF-Aitel-Fiere di Parma, Italy. 21-25 April, 1991.
39. Sipat A., Yazid M., Lajis M.N dan Ibrahim F. 1991. Purification of a Rennin-like Protease from Kesinai Plant (*Streblus asper*) Extract. Proc. International Seminar FIL-IDF-Aitel-Fiere di Parma, Italy. 21-25 April, 1991.
40. Alang, Z.C. dan Normah, M.N. 1990. In vitro techniques for conservation and utilization of underexploited tropical species. Invited paper presented at the International Workshop on: Conservation Plant Genetic Resources through *in vitro* methods, CSC. Kuala Lumpur, Jun 23th-30th. (In press).
41. Alang, Z.C., Zulaini, I., Faridah, S., Lim, E.S. dan Khalip, A.R. 1990. Regeneration of muskmelon from cotyledonary nodes and leaf discs. Paper presented at the Regional Symposium on "Trends in Biotechnology in the Asia-Pacific Region", Kuala Lumpur, 31st July -2nd August. (In press).
42. Alang Z.C., Krishnapillay, B., Siti Fatimah, P. dan Hisajima, S. 1990. Embryo culture and nursery establishment of sago palm plantlets. Papers presented at the 4th International Sago Symposium, Kuching, Sarawak, 6th-9th August. (In press).
43. Alang, Z.C., dan Hisajima, S. 1990. A preliminary study of stress tolerance in sago palm and oil palm embryos *in vitro*. Papers presented at the 4th International Sago Symposium, Kuching, Sarawak, 6th-9th August. (In press).

44. Alang, Z.C., Gan, Y.Y., Low, F.C. dan Paulose, E. 1990. Role of in vitro and recombinant DNA techniques in propagation and improvement of sago palm. Papers presented at the 4th International Sago Symposium, Kuching, Sarawak, 6th-9th August. (In press).
45. Salah Yusof, Ghazali, H.M. dan Gan, S.K. 1990. Naringin Contents of Local Citrus Fruits. Food Chem. 37(2) 113-122.
46. Ghazali, H.M. dan Goh, S.C. 1991. The Effect of Germination of the Physico-chemical Properties of Black Gram (*Vigna mungo* L.). Food Chemistry. In press.
47. Ghazali, H.M. dan Goh, S.C. 1991. The Effect of Illumination on The Vitamin C and Total Carotenoids Contents of Black Gram (*Vigna mungo* L.) sprouts. Pertanika. Accepted for Publication.
48. Fayyaz, A., Asbi, B.A., Ghazali, H.M., Che Man, Y.B. dan Jinap, S. 1991. Pectinesterase Extraction from Papaya. Submitted to J. Sci. Food and Agric.
49. Ghazali, H.M., Lee, K.H. dan Tanaka, A. 1990. Substrate Preference of Lipase When Bound To and Freed from the Cells of *Geotrichum candidum*. In Proceedings of the 3rd JSPS-VCC Seminar on Intergrated Engineering. Kuala Lumpur.
50. Fayyaz, A., Asbi, B.A., ghazali, H.M., Che Man, Y.B. dan Jinap, S. 1990. Isolation and Purification of Pectinesterase from Papaya. In: Proceedings of the Seminar on Advances in Food Research III. UPM.
51. P.M., Lee, K.H. Lee, W.C. Leong dan Mohd. Ismail Kamil. July/Aug, 1990. "Cocoa Beans Polyphenol oxidases". Proceedings in "Trends in Biotechnology in Asian-Pacific Region". UPM, Serdang.
52. K.H. Lee, P.M. Lee dan Y.S. Siaw. "Enzymatic resolution of DL-amino acids with aminoacylase". *ibid*.
53. P.M. Lee, K.H. Lee dan t.K. Seow. "Isolation and characterization of cocoa bean proteases". *ibid*.
54. P.M. Lee dan K.H. Lee. "Esr studies of lectin-receptor interactions". *ibid*.
55. P.M. Lee dan K.H. Lee. "Hypothesis: The implication of -haemolysin as a signal peptide". *ibid*.
56. Hasanah Ghazali dan K.H. Lee. "Lipolytic microorganism: s commercial potential". *ibid*.
57. K.H. Lee "Some aspects of protein studies". *ibid*.
58. Hasanah Ghazali dan K.H. Lee. "The screening and characterization of lipolytic enzyme from indigeneous sources". 3rd JSPS-VCC (Seminar on Chemistry Biotechnology and environmental Engineering, 1990. Kuala Lumpur, Malaysia.
59. P.M. Lee dan K.H. Lee. "The biochemical studies of cocoa enzyme". Symposium on Structure and Function relationship of proteins". HEJ. Research Institute of Chemistry, 1990, Karachi, Pakistan.
60. P.M. Lee, K.H. Lee dan Mohd. Ismail Abd. Karim. 1990. "Biochemical studies of cocoa beans polyphenoloxidase". In press.
61. K.H., Lee. Isolation and characterization of cocoa, coffee enzymes related to flavour production.
62. K.H., Lee. Screening and isolation of lipolytic enzymes from microorganisms e.g. lipases.
63. K.H., Lee. Applications of immobilized enzyme systems.

UPM KAMPUS BINTULU

**Pejabat Pentadbiran
KAKITANGAN
Jumlah Kakitangan**

JABATAN	KATEGORI A	KATEGORI B	KATEGORI C		KATEGORI D	
			TETAP	SAMBILAN	TETAP	SAMBILAN
Pej. Pengarah Kampus	1	-	1	-	-	-
Bhg. Perja- watan & Per- khidmatan	3	1	3	1	24	22
B h g Akademik & HEP	2	-	3	-	1	3
Bhg. Kewan- gan	2	2	7	3	-	3
Bhg. Harta Benda	1	-	1	1	4	1
Unit Komputer	1	-	1	1	-	-
Pusat Kesihatan	-	-	-	-	2	1
Jumlah	10	3	16	6	31	30
J U M L A H BESAR						96

Perlantikan Baru

Seramai 1 Penolong Pendaftar, 1 Juruteknik, 3 Kerani Tetap, 2 Kerani Sambilan, 5 Pegawai Keselamatan Tetap, 6 Pegawai Keselamatan Sambilan, 1 Pencuci Sambilan telah dilantik.

Perletakan Jawatan

Seorang Penolong Pegawai Kemajuan Sukan, 1 Pembantu Makmal, 1 Kerani tetap, 2 Kerani Sambilan, 1 Jurutaip Sambilan, 1 Pegawai Keselamatan Sambilan, 1 Pencuci Sambilan telah meletak jawatan.

SEMINAR/BENGKEL/KURSUS

1. Kursus Tatacara Pengendalian Mesyuarat dan Penulisan Minit diadakan pada 5hb hingga 6 hb November 1990.

2. Kursus Perhubungan Awam dan Pembentukan Imej diadakan pada 5hb Mac 1991.

3. Bengkel Pengendalian Telefon Dan Perkhidmatan Kaunter diadakan pada 16hb Mei 1991.

UPM KAMPUS BINTULU PUSAT PENGAJIAN SAINS GUNAAN KAKITANGAN

Jumlah Kakitangan

PROGRAM	KATEGORI			
	A	B	C	D
Pej. Dekan	1	-	-	2
Perhutanan	10	1	6	7
Pertanian	18	-	10	8

JUMLAH	29	1	16	17
JUMLAH BESAR				63

Perlantikan Baru

Seramai seorang kerani dan seorang jurutaip telah dilantik.

Perletakan Jawatan

Seorang kerani dan pembantu am telah meletak jawatan.

cuti Belajar

Seramai tiga (3) orang pensyarah dan empat (4) orang tutor sedang mengikuti kursus di dalam dan luar negeri. (Ph.D. = 5 & Master = 2).

PENYELIDIKAN

1. Abas bin Said, Othman bin Bojo, Mohd. Zaki bin Hamzah, Ismail Adnan bin Abdul Malek, Siti Rubiah bte. Zainudin: Pemilihan Ekosistem Hutan Hujan Tropika di Sarawak. (Penyelidikan bersama UPM dan Yokohama National University).

2. Ahmad bin Katang, Hamdan Jol: Kajian atas kecekapan pengambilan P oleh *Piper nigrum* melalui akar maikoriza.

3. Andrew Alek Tuen: Evaluation of Sago Waste As Animal Feed.

4. Arumugam, P.T. & S.H. Cheah: Kajian tabiat makanan dan ekologi fri. Projek MPKSN.

5. Adzemi bin Mat Arshad: Kesan Pengapuran ke atas Pengeluaran Hasil Lada di Tanah Ultisol di Sarawak.

6. Dr. Isa bin Ipor: Kajian Fotosintesis Lada (*Piper nigrum* L.).

7. Dr. Isa bin Ipor, Dr. Cheksum Tawan: Pengurusan rumpai dengan tanaman penutup bumi di Ladang Lada di Sarawak.

8. Dr. Taksum Tawan, Othman Bojo, Dr. Isa Ipor: "A revision of the Genus *Piper* in Borneo".

9. Dr. Isa bin Ipor: Ciri-ciri Anatomi dan Morfologi Rizom Lalang pada siri tanah yang berlainan di Sarawak.

10. Dr. Chaksum @ Supiah bt Tawan, Dr. Isa Ipor: Translocation of Imazapyr & Glyphosate in Two Varieties of *Impatiens cylindrica*.

11. Ismail Adnan bin Abdul Malek: Kajian terhadap dan Produktiviti Merakit Balak di Sarawak.

12. Ismail Adnan bin Abdul Malek: 'Log Skidding In The Swamp Forest using Winch-Mounted Sled'.

13. Joseph Bong Choon Fah: Microorganisms Associated with The Cocoa Pod Borer, *Conopomorpha cramerella* (Snellen).

14. Jugah bin Kadir: Kajian Awal Status Penyakit Mati - Rosot terhadap *Acacia mangium* Wild di Sarawak.

15. Jugah bin Kadir: Studies on *Phytophthora* Foot Rot of Pepper in Sarawak.

16. Hamdan Jol, Adzemi bin Mat Arshad: Kajian Pedologi Tanah-tanah yang ditanam dengan lada (*Piper nigrum* L.) di Sarawak.

17. Mohd. Zaki bin Hamzah, Ismail Adnan bin Abdul Malek, Othman bin Bojo: Kajian jarak penanaman (intensiti cahaya) ke atas pertumbuhan dan hasil koko di bawah naungan *Acacia mangium* dan *Gmelina arborea*.

18. Othman bin Bojo: Kajian sistematik ke atas genus *Baucaurea* Lour. (*Euphorbiaceae*) di Sarawak dan Sabah.

19. Dr. Sjahril Jazan bin Sjahab, Adzemi bin Mat Arshad, Hamdan Jol: Kesan Pengapuran dan Forforus ke atas Sifat Kimia Tanah dan Pertumbuhan Jagung.

20. Saisoon Jabu, Mohamad Razali bin Abdul Kadir: Nibong (*Oncosperma tigillarum*) As A Construction Material For Park Shelter in Landscape Architecture.

21. Siti Hajijah binti Abdullah Sani: Kandungan Galian dan Logam Berat dalam Cendawan Tiram yang ditanam di atas beberapa jenis Substrat.

22. Siti Hajijah binti abdullah Sani: Aetiology and Control of Soft Rot of French Beans (*Phaseolus vulgaris* L.).

23. Dr. Kasing Apun, Siti Hajijah binti Abdullah Sani: Kajian Taburan Mikroorganisma pada Lada semasa pemprosesan.

24. Siti Rubiah bte Zainudin, Dayang Awa bte Abang Lingku: Studies on Germination and Seedling Growth of *Eusideroxylon zwageri* T & B, dan *E. Melangangai* Sym.

25. Siti Rubiah bte Zainudin, Jugah bin Kadir: Regeneration Pattern of Some *Dipterocarp* Species with Gap Openings.

26. Dr. Sulaiman bin Hanapi, Maria Alimi Othman: "Spider Communities on Pepper (*Piper nigrum* L.) Vines".

27. Dr. Sulaiman bin Hanapi: Reaction of host, *Plutella xylostella*, to multiple oviposition by *Apanteles plutellae* and its implication on the ikatters survival.

28. Tonga Noweg, Ismail Adnan bin Abdul Malek dan Mohd. Zaki bin Hamzah: Kajian Kos Pengangkutan Balak di Sarawak.

29. Zamaliah binti Mohd. Marjan: Penilaian Taraf Permakanan dan Kesihatan Kanak-kanak Peringkat Umur 0-4 tahun dibiayai oleh R & D MPKSN.

PENERBITAN

1. Andrew Alek Tuen: "Digestion of *Asystasia intrusa* by sheep". 1990. Jurnal Veterinar Malaysia. (In press).

2. Andrew Alek Tuen: Utilisation of rice straw by goats. "Improving Sheep and Goat Productivity with the Aid of Nuclear Techniques". 1990. LAEA Publications - In press.

3. Arumugam, P.T. 1990. A continuous-flow chamber to study prey preferences of golden perch (*Macouaria ambigua* RICHARDSON) largae. *Hydro-biologia* 190(3).

4. Hanapi, S.B. & R.R. Askew: The Biology of *Pontanea collactanea*. 1990. Entomologist Monthly Magazine, (In press).

5. Ismail Adnan bin Abdul Malek: Log Skidding In The Peat Swamp Forest Using Winch Mounted Sled: Paper accepted for Symposium of Forest Harvesting in South East Asia, 17-22 June 1991, Singapore.

6. Ismail Adnan bin Abdul Malek: Pre-Investment Planning in Small Scale Logging. Occasional Paper (In press).

7. Othman bin Bojo, Mohd. Zaki bin Hamzah dan Abas bin Said: Rehabilitation of Tropical Rainforests Ecosystem in Sarawak. Paper presented at V INTECOL Congress, 23-30 August 1990, Yokohama, Japan.

UPM KAMPUS BINTULU

PUSAT PENGAJIAN SAINS SOSIAL DAN PENGURUSAN

DEKAN

Rahim bin Abdullah

KAKITANGAN

Jumlah Kakitangan

Kategori/ Bahagian/Unit	A	B	C	D
Pejabat Dekan	1	-	1	4
Pengurusan Perniagaan	7	-	-	-
Sosiologi	2	-	-	-
Bahasa	7	-	-	2
Pengembangan	6	2	-	-
Jumlah	23	2	1	6
Jumlah Besar				32

Perlantikan baru

Seramai 1 orang Pensyarah, 2 orang Tutor, 2 orang Guru Bahasa, dan 1 orang Guru Bahasa daripada Kampus Serdang telah melaporkan diri.

Perletakan Jawatan

Seorang Juruteknik telah meletakkan jawatan.

Cuti Belajar

Seramai 4 orang Pensyarah, dan 3 orang Tutor sedang mengikuti kursus di dalam dan luar negeri (Ph.D. 5, Master 2).

PENYELIDIKAN

1. Shazali Abu Mansor, Rosli Salleh, Mohd. Mansor Ismail: "Marketing System of Honey in Malaysia - A Study of the Marketing Channel in Sarawak".

2. Rahim Abdullah, Mohd. Mansor Ismail, Shazali Abu Mansor: "Economic Potential of Beekeeping in Sarawak".

3. Aishah Edris: "Farmers Participation in Area Farmets' Organisation (AFOS) In Sarawak".

4. Aishah Edris, Esmawi Othman, Bibi Aminah Abd. Ghani: "The Influences of Sociocultural Factors and other Languages on the Melanau Bintulu Dialect".

5. Eileen Yen: "Towards a Lexicon of Malaysian English".

6. Abd. Rashid bin Abdullah, Shazali Abu Mansor, Aishah Edris, Bibi Aminah Abd. Ghani, Douglas Alau Tayan, Esmawi Othman, Jegak Uli: "Kajian Etnik di Sarawak".

PENERBITAN

1. Abd. Rashid bin Abdullah. 1990. "The Responses of Two Bidayuh Communities to an insitu Land Development Programme" in King & Darnwall (Ed.) Margins and Minorities: The Peripheral Areas and Peoples of Malaysia, Hull University Press.
2. Jegak Uli. 1991. "Adoption of Vegetable Market Gardening as Cash Raising Activity Among the Bidayuh Farmers in Siburán, The Sarawak Museum Journal.
3. Eileen Yen. 1990. "Malaysian English and its Pedagogical Implications", Proceedings of the Fourth National Seminar on TESL, Kuala Lumpur.
4. Jegak Uli & Douglas Alau Tayan. 1991. "Menulis Rancangan Pelajaran untuk Pertunjukan Kaedah". Majalah Pengembangan. Jilid 13. Bil. 1.
5. Muzafar Shah Habibullah & Mohd. Mansor Ismail. 1991. "Beekeeping Activity: Prospect for Increasing Farmers Income in Rural Areas of Malaysia". Journal of Rural Development. Vol. 10(1) Jan, 1991, National Institute of Rural Development.
6. Abd. Rashid Abdullah. 1991. "Center Periphery Relations: Its Implications on Smallholder Farmers in Sarawak", Sarawak Gezette.
7. Mohd. Zabid Abd. Rashid, Juradah Abu Bakar, Rahim Abdullah. 1990. "Job satisfaction and Motivation Among Bank Officers", Banker's Journal. Number 61.
8. Rahim Abdullah. 1991. "Perwakilan Kuasa Pada Organisasi yang membesar". Usahawan Malaysia Bil. 53.
9. Rahim bin Abdullah. 1991. "Kepentingan Pengurusan Sumber Manusia", Usahawan Malaysia. Bil. 55, 56.

10. Dr. Esmawi bin Othman. 1990. "Perhubungan Kaum di Sarawak" kertas seminar Institut Kajian Dasar.

UPM KAMPUS BINTULU (PUSAT PENGAJIAN SAINS ASASI)

DEKAN

Dr. Ramli bin Ibrahim

KAKITANGAN

Jumlah Kakitangan

Kategori/ Jabatan	A	B	C	D
Pusat Pengajian Sains Asasi	16	-	7	10
Jumlah				13

Perlantikan Baru

Seorang Pensyarah dan dua (2) orang Pembantu Makmal (Sambilan).

Perletakan Jawatan

Seorang Tutor dan dua (2) orang Pembantu Makmal.

Cuti Belajar

Tiga (3)orang Pensyarah dan seorang Tutor sedang mengikuti kursus Ph.D di luar negeri.

PENYELIDIKAN

1. Awangku Abdul Rahman bin Pengiran Haji Yusof: Penggunaan Laser Mengesan Kecacatan Di Dalam Sesuatu Sampel.
2. Awangku Abdul Rahman bin Pengiran Haji Yusof: Air Pollution Control Equipment-Gravity Setting Chamber.
3. Azmi bin Jaafar: Pengesanan Pencemaran Udara di Bintulu.
4. Dr. Cheksum bt. Tawan: Pencemaran Plumbum dari Eksos Kenderaan di Bintulu.
5. Dr. Cheksum bt. Tawan: Morfologi dan anatomi Rizom Imperata cylindrica pada jenis Tanah yang berbeza.
6. Dr. Cheksum bt. Tawan: 7. Kajian terhadap biji dan anak benih bagi Gonystylus spp. dan genera yang berkaitan.
- Dr. Cheksum bt. Tawan: Kajian taksonomi bagi genus Piper di Borneo.
7. Dayang Maryani bt. Awang Hashim: Pengesanan Pencemaran Udara di Bintulu.
9. Farida bt. Abdul Halim: Pengesanan Pencemaran Udara di Bintulu.
10. Gwendoline Ee Cheng Lian: Kualiti Air Sungai-sungai di Bahagian Bintulu.
11. Dr. Hishamuddin bin Zainuddin: Pengesanan Pencemaran Udara di Bintulu.
12. Dr. Kasing ak. Apun: Taburan Mikroorganisma Pada Lada Semasa Pemprosesan (Penyelidikan Teras Lada).
13. Dr. Kasing ak. Apun: Kajian Penguraian Selulose Tempatan.

14. Dr. Kasing ak. Apun: Kualiti Air Sungai-sungai di Bahagian Bintulu.
15. Dr. Kasing ak. Apun: Pembaikpulih sisa-sisa dari kilang kayu.
16. Dr. Lau Seng: Kajian Penguraian Selulosa Tempatan.
17. Dr. Lau Seng: Lignin - Pencirian Lignin Kayu Tropika dan Rotan.
18. Dr. Lau Seng: Pembaikpulih Sisa-sisa dari kilang kayu.
19. Dr. Lau Seng: Pengesanan Pencemaran Udara di Bintulu.
20. Dr. Ramli bin Ibrahim: Lignin- Pencirian Lignin Kayu Tropika dan Rotan.
21. Dr. Ramli bin Ibrahim: Pembaikpulih sisa-sisa dari kilang kayu.
22. Dr. Ramli bin Ibrahim: Profail hidrokarbon alifatik dan aromatik dalam sampel Bahanapi dan Sekitaran.
23. Rozita bt. Johari: Concurrent Programming- Differneces Between Concurrent C and Concurrency In ADA (Focusing On A Different Aspect of Task Interaction).
24. Rozita bt. Johari: Pengesanan Pencemaran Udara di Bintulu.
25. Dr. Zani bin Assim: Profail hidrokarbon alifatik dan aromatik dalam sampel Bahanapi dan Sekitaran.
26. Dr. Zani bin Assim: Penentuan secara kualitatif dan kuantitatif pencemar organik dalam sampel Enapan.
27. Dr. Zani bin Assim: Chemical Composition of epicuticular wax of Paspalum conjugatum.
28. Dr. Zani bin Assim: Pencemaran Plumbum dari Eksos Kenderaan di Bintulu.

UPM KAMPUS BINTULU (BAHAGIAN LADANG)

PENYELARAS

Encik Ahmad bin Katang

PENDAHULUAN

Bahagian Ladang, Universiti Pertanian Malaysia Kampus Bintulu memainkan peranan yang aktif bagi tahun akademik 1990 - 1991 berkaitan dengan pelaksanaan pembangunan Ladang dan pelaksanaan aktiviti-aktiviti akademik.

Secara amnya, unit-unit tanaman dan ternakan berikut telah dan sedang dibangunkan:

KAWASAN UNIT	LUAS KAWASAN Hek.
Akuakultur	104
Buah-buahan	-
Cendawan	48
Getah	130
Hortikultur & Landskap	2
Kelapa	106
Kelapa Sawit	10
Ladangkongsi	2
Sayur-sayuran	8
Tanaman inuman	15
Tanaman Musiman	15
Tanaman Rempahan	2
Ternakan Bukan Ruminan	100
Ternakan Ruminan & Pastura	6
Ulat Sutera & Lebah Madu	650
Infrastruktur Ladang & Lain-lain Kawasan	

Dalam bidang akademik pula, kursus-kursus yang berikut telah ditawarkan dengan jayanya.

Kod	Nama Kursus	Jumlah Kredit
LLK 201	Ladangkongsi 1	2
LLK 202	Ladangkongsi 2	2
LKL 211	Berkebun Sayur	1
LKL 212	Penanaman Buah-buahan	1
LKL 213	Tanaman Hiasan & Landskap	1
LKL 221	Tanaman Estet	1
LKL 222	Tanaman Ladang	1
LKL 231	Pengurusan Perosak	1
LKL 241	Tanaman Ruminan	1
LKL 242	Ternakan Bukan Ruminan	1
LKL 251	Mekanisasi Ladang	1
LKL252	Bengkel Kerjaladang	1

KAKITANGAN

Jumlah Kakitangan

KATEGORI A	3
KATEGORI B	7
KATEGORI C	13
KATEGORI D	66

JUMLAH	89
---------------	----

Perlantikan Baru

Empat orang Pekerja Am (Sambilan) telah dilantik.

Perletakan Jawatan

Dua orang Pekerja Am (Sambilan) telah meletakan jawatan.

PENYELIDIKAN

1. Ahmad bin Katang: Kesan n terhadap komponen hasil dan hasil lada sula yang ditanam bersama *D. trifolium*.

UPM KAMPUS BINTULU

(PERPUSTAKAAN)

KAKITANGAN

Jumlah Kakitangan

Bahagian/Unit	
KATEGORI A	3
KATEGORI B	-
KATEGORI C	4
KATEGORI D	17
jUMLAH	24

Perlantikan Baru

Seramai 6 orang Pembantu Perpustakaan dan 5 orang Pembantu Am Rendah telah dilantik.

Perletakan Jawatan

Seorang Pembantu Perpustakaan dan 3 orang Pembantu Am Rendah telah meletak jawatan.

Keahlian

Di akhir tahun akademik 1990/91 ahli berdaftar adalah seperti berikut:

Kumpulan	Bil. 1989/90	Bil. 1990/91
Pegawai	109	92
Pegawai Am	128	115
Ahli Luar	14	16
Penuntut	679	931
Jumlah	930	1,154

Perkembangan Penggunaan Koleksi Perpustakaan.

Pinjaman dan Pemulangan

Di bawah diperturunkan butir-butir lanjut mengenai pinjaman dan pemulangan bahan-bahan Perpustakaan.

	1989/90	1990/91
Pijaman buku dan jurnal berjilid	13,745	18,833
Pinjaman buku berbintik merah	3,689	5,664
Pijaman Risalah	427	635
Pinjaman Ahli Luar	50	83
Pinjaman Bahan pandang dengar	70	90
Pemulangan buku dan jurnal berjilid	13,486	18,479
Bilangan buku-buku dipanggil semula	124	95
Tempahan	303	558

Pinjaman Antara Perpustakaan

Kedudukan Pinjaman Antara Perpustakaan secara perbandingan adalah seperti berikut:

	1989/90	1990/91
Permohonan dari dalam	255	431
dipenuhi	138	127
Kadar kejayaan	54.12%	29.46%
Permohonan dari luar	11	13
dipenuhi	10	13
Kadar kejayaan	90.9%	100%

Kemajuan Koleksi Perpustakaan Cawangan Sarawak.

Koleksi	Pada Akhir 1989/90	Pada Akhir 1990/91	Tambahan Bahan Dlm. 1990/91
Buku (Naskhah)	50,678	54,543	3,865
Jurnal Ber-Jilid	2,107	2,107	-
Abstrak & Indeks Berjilid	457	610	153
Jumlah	53,242	57,260	4,018
Terbitan Bersiri (Judul)			
Langganan	343	370	27
Hadiah	325	362	37
Jumlah	668	732	64

B a h a n Pandang Dengar (Unit)			
Filem	51	51	-
Filem Gelung	7	7	-
F i l e m			-
Relung	13	13	-
Filem Slaid	95	95	503
Mikrofis	547	1050	
Mikro- filem	51	75	24
Carta	18	18	22
Pet Topo- grafi	221	243	-
Kit	37	37	-
Kaset	137	137	-
Pita Audio	80	80	-
Pita Video	203	213	10
Jumlaj	1,460	2,019	559

Penggunaan Perkhidmatan Perpustakaan

PUSAT PENGEMBANGAN DAN PENDIDIKAN LANJUTAN

DEKAN

Prof. Dr. Alang Perang Abd Rahman bin Hj. Zainuddin.

KAKITANGAN

Jumlah Kakitangan

Jabatan	Kategori A	Kategori B	Kategori C	Kategori D
Pejabat Am Pengarah	4	-	4	8
Jabatan Pendidikan Pengembangan	19	-	1	-
Jabatan Komunikasi Pembangunan	16	1	10	7
Unit Pendidikan Lanjutan	1	1	2	20
Unit Perkhidmatan Pengembangan	2	12	-	1
Jumlah	42	14	17	36
Jumlah Besar				109

Perlantikan Baru

Seorang Pensyarah dan seorang Pembantu Am Rendah telah dilantik.

Cuti Belajar

Tujuh orang pensyarah telah mengikuti kursus Ph.D di dalam dan di luar negeri.

Cuti Sabatikal

Seramai tiga orang pensyarah telah mengambil cuti sabatikal pada sesi akademik 1990/91.

Bertugas Semula

Prof. Dr. Alang Perang Abdul Rahman bin Hj. Zainuddin yang dipinjamkan ke FAO telah kembali bertugas dan dilantik menjadi Pengarah menggantikan Prof. Madya Dr. Rahim Md. Sail.

PERKARA AKADEMIK

Seramai 93 orang pelajar Ijazah Lanjutan telah mendaftar di PPPL iaitu 65 di peringkat Master dan 23 orang di peringkat Ph.D.

Pemeriksa Luar

1. Profesor John M. Peters dari The University of Tennessee Knoxville.
2. Profesor G.L. Carter J.R. dari College of Education and Psychology, North Carolina State University.
3. Profesor Edgar J. Boone dari North Carolina State University

PENYELIDIKAN

1. Prof. Dr. Sulaiman Hj. Mohd Yassin: Mengukur Kecemerlangan Akademik.
2. Dr. Ng Choon Sim; Kesan Pembangunan Teknologi Ke atas Status Wanita dalam Sektor Bandar.
3. Saodah Wok: Information Sharing Among Research and Development Agencies with the Oil Palm Industry - Communication Network Analysis.
4. Dr. Abu Daud Silong: Perancangan Pembangunan Sumber Manusia dalam Pembangunan Negara.
5. Prof. Madya Dr. Hj. Saidin Teh: The Dynamics Technology Transfer in Rubber Smallholding Sector.
6. Prof. Madya Dr. Rahim Md. Sail: Accurate and Timely Information for Technology Generation and Development: The Care of Rubber Smallholdings in Peninsular Malaysia.
7. Abdul Mua'ti @ Zamri Hj. Ahmad: Kaedah Mengawal Kegugupan dalam Ucapan-ucapan Pembangunan oleh Pegawai-pegawai Pengembangan RISDA dan LPP.
8. Shamsuddin Ahmad: Tanggapan Pemimpin Terhadap Masalah Pembangunan Sumber Masyarakat.
9. Dr. Abu Daud Silong: Penawaran dan Permintaan Ke atas Gunatenaga Mahir dan Profesional dalam Industri Terpilih.

SEMINAR/KURSUS/BENGKEL YANG DIANJUR

1. Sebelas siri kursus Kepimpinan dalam Pembangunan Masyarakat untuk JPUP KADA daripada Februari hingga Disember 1990.
2. Kursus Teknik Pengeluaran Video untuk Institut Kesihatan Umum Kuala Lumpur diadakan pada 12-24 November 1990.
3. Kursus Pengurusan Institusi-Institusi Latihan diadakan pada 12-17 November 1990.
4. Kursus Kaedah Latihan untuk Tenaga Pengajar RISDA diadakan pada 17-21 Disember 1990.

5. Kursus Penulisan Kertas Cadangan dan Laporan diadakan pada 4-6 Februari 1990.
6. Kursus Latihan Jurulatih, Jabatan Kebajikan Masyarakat pada 9-10 Mei 1991.
7. Kursus 'Prestressed Concrete' yang dianjurkan oleh Pusat Kemahiran pada 14-16 Mei 1991.

Di samping itu pensyarah-pensyarah Pusat banyak terlibat memberi syarahan-syarahan dalam kursus-kursus yang dianjurkan oleh agensi-agensi pembangunan kerajaan seperti RISDA, FELDA dan Institut Umum.

BAHAGIAN IADANG

PENGARAH

Prof. Madya Dr. Sheikh Awadz Sheikh Abdullah.

KAKITANGAN

Jumlah Kakitangan

PEJABAT/ CAWANGAN	KATEGORI			
	A	B	C	D
Pejabat Pengarah	12	1	20	21
Cawangan Tanaman Hortikultur	3	4	15	108
Cawangan Tanaman Perladangan	4	5	13	24
Cawangan Pengurusan Perosak	1	1	1	1
Cawangan Ternakan	2	4	15	95
Cawangan Kejenteraan	4	3	24	105
Jumlah	26	18	88	354
Jumlah Besar				486

Perlantikan Baru

Seramai 4 orang Penolong Pegawai Pertanian dan seorang Pembantu Teknik telah dilantik.

Perletakan Jawatan

Seorang Pensyarah telah meletakkan jawatan. cuti Belajar

Seorang Pensyarah sedang mengikuti kursus di luar negeri.

Kenaikan Pangkat

Seorang Penolong Pegawai Pertanian dinaikkan pangkat ke jawatan Penolong Pegawai Pertanian Tingkatan Kanan.

Seorang Juruteknik Pertanian tingkatan Kanan dinaikkan pangkat ke jawatan Juruteknik Pertanian Tingkatan Tertinggi.

3 orang lagi telahpun dinaikkan pangkat ke jawatan Juruteknik Tingkatan Kanan.

Kenaikan Pangkat Secara Lantikan

Seramai 12 orang Juruteknik Rendah telah dinaikkan pangkat ke jawatan Juruteknik.

Persaraan

Seramai 8 orang telah bersara dari Bahagian Ladang iaitu; 2 jawatan Juruteknik Pertanian

Rendah, 3 jawatan Juruteknik Rendah, seorang Pekerja Am, seorang Pemandu dan seorang Juruteknik Pertanian.

LAPORAN KHIDMAT PENGEMBANGAN BAHAGIAN LADANG 1990-91.

(a) Kursus Dalam Perkhidmatan

1. Bengkel Asas Hortikultur Landskap Ke 6 diadakan pada 28 Mei - 31 Mei 1990 di UPM. Peserta: Kakitangan Lembaga Tembakau Negara Malaysia - 22 orang.

2. Bengkel Pengurusan Padang Permainan diadakan pada 26-30 Nov. '90 di UP. Peserta: Kakitangan semua Universiti di Malaysia - 15 orang (dianjurkan bersama Unit Sukan UPM dan Syarikat Harison & Crossfield).

3. Asas Rekabentuk Landskap diadakan pada 15.2.90 di Bandar Melaka. Peserta: Kumpulan C & D Jab. Perancangan Bandar & Desa Negeri Melaka. (dianjurkan bersama Jab. Perancang Bandar & Desa Semananjung).

4. Bengkel Hortikultur Landskap diadakan pada Mei '90 di Tangkak Johor. Peserta: Kakitangan LPP Johor Utara. (dianjurkan bersama LPP Johor).

5. Kursus Landskap diadakan pada 26-30 Mei 1990 di Teluk Chengai Kedah. Peserta: Pusat Latihan Pengembangan Pertanian (PLPP) Jabatan Pertanian. (dianjurkan bersama Jabatan Pertanian Kedah).

6. Bengkel Asas Hortikultur Landskap diadakan pada 6-11 Mei 1991 di UPM. Peserta: Kakitangan FAMA, Jabatan Pertanian, KETENGAH, UPM, PKNS..

7. Bengkel Lanjutan Hortikultur Landskap diadakan pada 13-25 Mei 1991 di UPM. Peserta: Kakitangan UIA, PKNS, ITM, Majlis Perbandaran, Jabatan Pertanian, FELCRA, UPM, Dewan Bandaraya, MARDI, FRIM & Swasta.

(b) Seminar yang dianjurkan

1. Pengumpulan, Pemulihan Genetik Buah-buahan diadakan pada 8.9.90 di bilik Seminar Ladang. Peserta: Pegawai Ladang & Terbuka.

2. Peralatan Jentera Pertanian Korea Selatan 17.11.90 di Bilik Seminar Ladang. Peserta: Pegawai Ladang & Terbuka.

3. Penyelidikan Semasa Mengenai Udag Galah diadakan 8.12.90 di Bilik Semianr ladang. Peserta: Pegawai Ladang & Terbuka.

(c) **Aktiviti Khidmat Nasihat**

1. Khidmat Juru Perunding dan Naihat Pembangunan Kawasan Johor Tenggara (KEJORA).

(a) Kerja-kerja Landskap dan Pembvina Kawasan Golf 18 lubang.

(b) Penyelidikan Kawasan Buah-buahan

(c) Pusat Penyelidikan Agro Maju. Agro Maju Sdn. Bhd. (KEJORA) di Johor Tenggara (anjaran bersama Fakulti Pertanian).

2. AJK Kecil Pengindahan Bandar. (Majlis Perbandaran Petaling Jaya) di Petah ng Jaya.

PENERBITAN

1. Latihan Kerjaladang. 300 Naskah (4.4.91).

2. Status Pokok Buah-buahan di Sekitar Kampus UPM Serdang 100 naskah (4.4.91).

PERPUSTAKAAN

KETUA PUSTAKAWAN

Syed Salim Agha.

PENDAHULUAN

Usaha ke arah mewujudkan sistem Perpustakaan berkomputer diteruskan dengan pemerolehan Sub-sistem Perolehan dan Perakaunan. Sub-sistem ini mula digunakan selari dengan sistem perolehan secara manual selama 3 bulan, iaitu Oktober-Disember 1990. Sistem perolehan berkomputer dilaksanakan sepenuhnya bagi pemerolehan buku mulai Januari 1991, sementara bagi pemerolehan terbitan bersiri ditangguhkan dahulu oleh kerana beberapa butiran yang perlu untuk proses tuntutan bahan belum selesai dimasukkan ke dalam sistem.

Perpustakaan telah mengadakan satu lagi perkhidmatan baru bagi pengguna dengan melancarkan perkhidmatan mikrokomputer mulai Februari 1991. Sejumlah 30 unit mikrokomputer ICL telah dihidiahkan oleh Pusat Komputer kepada Perpustakaan. Penggunaan mikrokomputer tersebut adalah terhad kepada penggunaan pemprosesan perkataan. Di samping itu Perpustakaan juga telah menawarkan perkhidmatan mel elektronik (electronic mail) melalui CGNET. Dengan adanya perkhidmatan ini pengguna boleh membuat perhubungan cepat dengan penyelidik, pemeriksa dan pertubuhan luar negara. Ia juga boleh digunakan untuk bertukar pendapat dengan penyelidik-penyelidik di merata dunia.

KAKITANGAN

Sehingga 31 Mei 1991, jumlah kakitangan Perpustakaan ialah:

A	B	C	D	JUMLAH
36	-	33	77	146

Perlantikan Baru

Pembantu Perpustakaan seramai 3 orang; Pembantu Perpustakaan Sambilan seramai seorang dan Pekerja Am Sambilan ialah 2 orang.

Perletakan Jawatan

Seramai tiga orang pegawai meletak jawatan.

Cuti Sabatikal

Tuan Syed Salim Agha bercuti sabatikal di IDRC, Kanada dari 15 April 1990 hingga 15 Oktober 1990.

Pemangkuan

Encik Ibrahim Kassim memangku jawatan Ketua Pustakawan sepanjang tempoh Tuan Syed Salim Agha bercuti sabatikal iaitu dari 15 April 1990 hingga 15 Oktober 1990.

Ceramah/Kursus yang diadakan

1. Bengkel Alat Pandang-dengar untuk Pembantu Perpustakaan, 19hb Jun, 1990. Dikendalikan oleh encik Muzaffar Shah Kassim, Pustakawan, Unit Bahan Pandang-dengar.
2. Kursus Motivasi untuk kumpulan Penyemak, Penjilid dan Pembantu Perpustakaan, 20-21hb. Jun, 1990. Dikendalikan oleh Cik Halimatun Halaliah Mokhtar, Puan Halijah Mohd dan Encik Sidek Mohd Noah, Pensyarah-pensyarah dari Unit Bimbingan dan Kaunseling, Fakulti Pengajian Pendidikan.
3. Kursus Pengenalan Perpustakaan untuk para pegawai Badan-badan Berkanun Malaysia dalam kumpulan C & D, 25-28hb Jun, 1990. anjuran Persatuan Badan-badan Berkanun Malaysia dengan kerjasama Perpustakaan UPM. Dikendalikan oleh para Pustakawan Perpustakaan ini.
4. Kursus Pengenalan Menggunakan Perpustakaan untuk pelajar baru UPM, 2-23hb Julai, 1990.
5. Ceramah 'Leadership and Team Building' untuk pegawai ikhtisas Perpustakaan UPM, 20hb Oktober, 1990. Dikendalikan oleh Tuan Haji Yusof Ahmad, Timbalan Pendaftar, Pejabat Naib Canselor, UPM.
6. Seminar Pengurusan Masa untuk pegawai ikhtisas Perpustakaan UPM, 2hb Februari, 1991. Dikendalikan oleh Puan Nooryah Ghulam, Pustakawan, Bahagian Perolehan.
7. Seminar Teknik-teknik Membuat Keputusan Secara Kuantitatif untuk pegawai ikhtisas Perpustakaan UPM, 27hb April, 1991. Dikendalikan oleh Prof. Madya Dr. Zainal Abidin bin Mohamed, Timbalan Dekan, Fakulti Ekonomi dan Pengurusan.

8. Kursus Peningkatan Pusat Sumber untuk Penyelia dan Pemaju masyarakat KEMAS, 5-10hb Mei, 1991, anjuran Bahagian Kemajuan Masyarakat (KEMAS) dengan kerjasama Perpustakaan UPM.

9. Kursus Latihan AGRIS/CARIS Untuk Pustakawan Malaysia, 6-7hb. Mei 1991. Dikendalikan oleh Dr. Dorit Engl dari AGRIS Processing Unit, Vienna.

Ceramah/kerjaya dibentangkan oleh pegawai

1. Ceramah alat Pandang-dengar oleh encik Muzaffar Shah Kassim di Bengkel Alat Pandang-dengar untuk Pembantu Perpustakaan UPM pada 19hb Jun, Jun 1990.

2. Ceramah Perpustakaan dan pembelajaran oleh Puan Wan Faridah Wan Mansor di Bengkel fasilitator Minggu Orientasi, UPM 1990/91 pada 24 Jun, 1990.

3. Ceramah:
- i. Perolehan bahan-bahan perpustakaan.
 - ii. Pengkatalogan dan pengkelasan asas.
 - iii. Aplikasi komputer di Perpustakaan.
- oleh Puan Kamariah Abdul Hamid.
 - iv. Sistem Pinjaman oleh Puan Rahmah Abdul Jalil.
 - v. Perkhidmatan Rujukan oleh encik Mohd. Ariff Ariffin.
 - vi. Pengenalan kepada alat pandang-dengar oleh encik Amir Hussain Md. Ishak.

di Kursus Pengenalan Perpustakaan anjuran Persatuan Badan-badan Berkanun Malaysia pada 25-28hb. Jun, 1990 di Serdang.

4. Ceramah Audio-Visual materials in libraries oleh Encik amir Hussain Md. Ishak di Kursus Basic Course for Library Assistants anjuran Perpustakaan Negara Malaysia pada 6hb. Ogos, 1990 di Serdang.

5. Ceramah Teknik Membuat Rujukan di Perpustakaan oleh Puan Kamsiah Mohd. Ali di Bengkel Teknik Belajar anjuran Bahagian hal Ehwal Pelajar pada 8hb Disember, 1990.

6. Ceramah Pengurusan Masa oleh Puan Nooryah Ghulam di Seminar Pengurusan Masa untuk pegawai iktisas Perpustakaan UPM pada 2hb. Februari, 1991.

7. Ceramah Mewujudkan Budaya Membaca dan Budaya Perpustakaan oleh Encik Ibrahim Kassim di Sekolah Menengah Convent Sentul pada 27hb. Mac, 1991.

8. Ceramah Mengguna Perpustakaan dengan berkesan oleh Puan Kamsiah Mohd. Ali dan Puan Nor Zaidah Mohd. Hashim di Kursus Perpustakaan untuk pelajar program Bachelo Sains Pembangunan Manusia pada 7-8hb Mei, 1991.

9. Ceramah Pembentukan Bahan Alat Pandang-dengar dan Bengkel Pengendalian Bahan APD oleh Encik Amir Hussain Md. Ishak di Kursus Peningkatan Pusat Sumber anjuran Bahagian Kemajuan Masyarakat pad 7hb. Mei, 1991.

KEMAJUAN KOLEKSI

Bagi koleksi monograf, jumlah judul dan naskhah yang dipesan dalam tempoh Jun 90 hingga Mei 91 adalah seperti berikut:

	Judul	Naskhah
Buku Serdang	8560	9650
Buku Terengganu	86	101
BacaanKanak-kanak (BK)	110	110
Bacaan Ringan (BR)	30	33
	8806	9894

Sementara itu judul dan naskhah yang telah diterima adalah seperti berikut:

	Judul	Naskhah
Buku Serdang	6818	7577
Buku Terengganu	25	37
Bacaan Kanak-kanak (BK)	179	182
Bacaan Ringan (BR)	309	315
Jumlah	6831	8111

Bagi koleksi bahan pandang dengar, Bahagian Perolehan telah menerima bahan-bahan beri:

	Pesanan	Hadiah
Video	32	-
Slide	80	-
Mikrofis	1525	21
Kaset	28	-
Tape	-	-
Peta	488	-
Poster	-	-
Kad	-	-

BagiKoleksi bahan terbitan bersiri pula, Bahagian Perolehan telah melanggan sebanyak 14 judul baru sementara 22 judul telah dibatalkan. Sehingga bulan Mei 1990, jumlah judul yang dilanggan adalah seperti berikut:

Langganan	Serdang & Terengganu
Lama	2219
Baru	+ 14
Batal	-22
Jumlah	2211

Jumlah naskhah jurnal yang diterima sebanyak 16,325 naskhah.

Di samping itu jumlah buku dan jurnal yang diterima sebagai hadiah adalah seperti berikut:

	Jumlah Judul	Jumlah Naskhah
Buku	1716	2055
	Jumlah Judul Baru	Jumlah Naskhah
Jurnal	10	4991

KOLEKSI SERDANG	HINGGA APRIL 1991
Buku (naskhah)	
Buku Am	204405
Junal Berjilid	44273
Koleksi Bibliografi	7877
Koleksi Rujukan	14963

Koleksi Malaysiana (KM)	
- Buku	3665
- Jurnal	
- Judul	570
- Berjilid	1985
- Belum Berjilid	2046
Jumlah Besar	279784
Terbitan Bersifi (Jurnal)	
Dilanggan	2378
Hadiah	3721
Jumlah	6099
Koleksi Buku Berbintik Merah (KBBM)	15613 ?
Termasuk buku, tesis, Laporan projek, Laporan ladangkongsi, artikel, kertas peperiksaan dan jurnal	
Koleksi Buku Berbintik Kuning (KBBK)	1115

Bahan Padang Dengar (Unit)		
Carta	102	239
Lutsinar	80	1372
Kad	9	300
Gambarfoto Udara	75	744
Peta Laut	88	100
Kit	162	224
Jumlah	27482	56628

PENGUNAAN PERKHIDMATAN PER- PUSTAKAAN

Keanggotaan

Kumpulan	Dari Jun 90- April 91
Pegawai Akademik UPM (A)	775
Pegawai Akademik UPM (T)	78
Pegawai Am UPM	606
Anggota Luar (Badan Kerajaan/Berkanun)	278
Anggota Luar (Swasta/Perseorangan)	118
Siswazah Lanjutan	393
Pelajar Tanpa Ijazah	18
Penuntut	7056
Pegawai Sementara	267
Anggota Rujukan	227
Jumlah	9816

* data telah diselaraskan dengan data tahun 1989/1990.

Pinjaman dan Pemulangan

	Dari Jun 90- April 91
Pinjaman buku dan jurnal berjilid	13150
Pemulangan buku dan jurnal berjilid	27644
Tempahan bukudan jurnal berjilid	3668
Panggilan semula buku dan jurnal berjilid	4054
Pinjaman jurnal belum belum (kk)	13504
Pinjaman buku berbintik merah (KBBM)	51590
Pinjaman bahan pandang dengar (BPD)	4907
Pinjaman alat pandang dengar (BPD)	2143
	120660

Pinjaman Antara Perpustakaan

Kumpulan	Dari Jun 90- April 91
Permohonan dari dalam Dipenuhi Kadar Kejayaan	1700 1222 71.9%
Permohonan dari luar Dipenuhi Kadar Kejayaan	1836 951 51.8%

CAWANGAN SARAWAK

Kemajuan Koleksi Perpustakaan Cawangan
Sarawak

Koleksi	Hing ga Akhir April 1990	Hing ga Akhir April 1990/91	Tambah - a n Bahan Dalam 1990/91
Buku (nashah)	50678	54543	3865
Jurnal Berjilid	2107	2107	-
Abstrak & Indeks Berjilid	457	610	153
Jumlah	53242	57260	4018
Terbitan Ber- siri (Judul)			
Langganan	343	370	27
Hadiah	325	362	37
Jumlah	668	732	64
Bahang Pan- dang Dengar (Unit)			
Filem	51	51	-
Filem Gelung	7	7	-
Filem Relung	13	13	-
Filem Slaid	95	95	-
Mikrofis	547	1050	503
Mikrofilem	51	75	24
Carta	18	18	-
Peta Topografi	221	243	22
Kit	37	37	-
Kaset	137	137	-
Pita Audio	80	80	-
Pita video	203	213	10
Jumlah	1460	2019	559

Penggunaan Perkhidmatan Pepustakaan

Keanggotaan

Kumpulan	Bilangan 1989/90	Bilangan 1990/91
Pegawai Akademik	109	109
Pegawai Am	128	128
Anggota Luar	14	13
Penuntut	679	946
Jumlah	930	1196

Di akhir tahun akademik 1990/91 anggota berdaftar adalah seperti berikut:

Perkembangan Penggunaan Koleksi Perpustakaan

Pinjaman dan Pemulangan

Di bawah diperturunkan butir-butir lanjut mengenai pinjaman dan pemulangan bahan-bahan Perpustakaan.

	1989/90	1990/91
Pijaman buku dan jurnal berjilid	13,745	18,833
Pijaman buku berbintik merah	3,689	5,664
Pijaman Risalah	427	635
Pijaman Anggota Luar	50	83
Pijaman bahan padang dengar	70	90
Pemulangan buku dan jurnal berjilid	13,486	18,479
Bilangan buku-buku dipanggil semua	124	95
Bilangan Tempahan	303	558

Pinjaman Antara Perpustakaan

Kedudukan Pinjaman Antara Perpustakaan secara perbandingan adalah seperti berikut:

	1989/90	1990/91
Permohonan dari dalam dipenuhi	255 138	431 127
kadar kejayaan	54.12%	29.46%
Permohonan dari luar dalam negeri dipenuhi	11 10	13 13
Kadar Kejayaan	90.9%	100%

CAWANGAN TERENGGANU

Koleksi	Pada akhir Jun 90	Pada akhir April 91	Tam- bahan Bahan Jun 90- Apr 91
Buku(naskhah)			
Buku Am & Jurnal Berjilid	4232	4512	280
Bibliografi	41	53	12
Koleksi Rujukan	394	398	4
Jumlah	4667	4963	296
Bahan Pandang Dengan (Unit)			
Mikrofis	-	-	-
Carta	2	2	-
Kad	2	2	-
Filem	7	7	-
Filem Gelung	31	31	-
Peta	-	-	-
Mikrofilem	-	-	-
G a m b a r i o t o Udara	152	152	-
Jumlah	194	194	-

Penggunaan Perkhidmatan Perpustakaan

Keanggotaan

Di akhir tahun akademik Jun 1990/91 ahli berdaftar adalah seperti berikut:-

Kumpulan	Bilangan Jun 90	Bilangan Mei 91
Pegawai Akademik UPM	23	23
Pegawai Am UPM	42	43
Siswazah Lanjutan	2	2
Penuntut	6	62
Jumlah	73	130

Pameran Bahan-bahan Perpustakaan

1. Pameran sempena Persidangan Hortikultur Antarabangsa 1990 di PPL UPM pada 7-9 Ogos 1990.

2. Pameran sempena Simposium Bioteknologi di PPPL, UPM pada 31 Julai - 2 Ogos 1990.

3. Pameran "Alam Semulajadi" tajaan 'World Wildlife fund' di Perpustakaan, UPM pada 13-14 Ogos 1990.

4. Pameran sempena Seminar Pendidikan Jasmani dan Sains Sukan di PPPL, UPM pada 28-29 September 1990.

5. Pameran buku-buku mengenai 'The Edge of Technology' tajaan Lincoln Resource Center di Perpustakaan, UPM pada 6-25 Oktober 1990.

6. Pameran Fotografi Kelas PP206 di Perpustakaan, UPM pada 18-25 Oktober 1990.

7. Pameran buku-buku sempena Bengkel Kebangsaan UNESCO 'Promotion of Microbiology in Malaysia' di PPPL, UPM pada 28-29 Januari 1991.

Pusat Kebangsaan Agris Malaysia

Dalam tahun akademik 1990/91, 539 input disediakan untuk AGRINDEX dan 72 input disediakan untuk AGRIASIA. Semua input dihantar dalam bentuk cakera liut dengan menggunakan perisian Micro CDS/ISIS.

Dua keluaran Buletin Maklumat Pertanian Malaysia telah diterbitkan, dan diedarkan percuma kepada kurang-lebih 3000 pengguna.

Percetakan

Sebanyak 249 permohonan untuk mendapatkan perkhidmatan percetakan telah diterima pada tahun 1990/91. Sebanyak 1,045,854 muka surat telah dicetak. Kegiatan percetakan meliputi cetakan Borang, Jadual, Surat Standard, Pekeliling, Minit Mesyuarat, Senarai Perolehan, Buletin Maklumat Pertanian, Risalah, Panduan Perpustakaan dan sebagainya.

Permikrofileman

Sejumlah 472 keping mikrofis dan 1386 salinan diazo telah dapat disiapkan dalam tempoh 1990/91. Pemikrofileman Perpustakaan meliputi kerja-kerja membuat mikrofis tesis dan laporan projek dan salinan Diazo untuk tesis, laporan projek UPM.

Arkib

Koleksi Arkib bertambah dengan penerimaan fail-fail pelajar dari Bahagian Kemasukan, fail-fail dari Jabatan Perpustakaan dan terbitan-

terbitan UPM dan sehingga kini sepanjang 424.2 meter rekod telah disimpan. Ini merupakan pertambahan sebanyak 14.2 meter dalam tahun 1990/91

Penerbit UPM

Dalam tempoh 1990/91 sebanyak 7 juful telah diterbitkan. Di samping menerbit buku teks Penerbit UPM menerbitkan juga 4 isu 'Berita Penyelidikan', 3 isu jurnal 'PERTANIKA' dan 2 isu surat berita 'OPTIONS'.

PENERBITAN

1. Buletin Maklumat Pertanian Malaysia. 3 kali setahun.

2. Buku Panduan Perpustakaan Universiti Pertanian Malaysia - Jun 1990.

3. Senarai Perolehan Perpustakaan Universiti Pertanian Malaysia. Jun-Dis 1990.

4. Senarai Penerbitan Pegawai-pegawai UPM 1982-85. Mei 1991.

Penerbitan yang dihasilkan dalam tempoh Jun 1990 - Mei 1991.

1. Ekonomi Alam Sekitar. D.W. Pearce (Pengarang); Mohamad Salleh (Penterjemah), 1990. 195 hlm. M\$30., ISBN 967-9952-57-6.

2. Kawalan Biologi: Abdul Ghani Ibrahim, 1990. 112 hlm. M\$15, ISBN 967-9952-59-2.

3. Handbook on Identification of Fruit Flies in the Tropics. Rohani Ibrahim & Abdul Ghani Ibrahim (Editors) 1990., 199 pp. M\$25, ISBP 967-9952-59-2.

4. Pengoptimuman tak Berkekangan dengan Fortran: Malik Hj. Abu Hasan, 1990. 125 hlm. M\$30, ISBN 967-9952-60-6.

5. Teknologi Peralatan Perikanan. Abd. Rahim Ibrahim (Penyunting). 1991. 225 hlm. M\$30. ISBN 967-9952-60-2.

6. Management and Utilization of oil palm wastes: a review. Megat Johari Mohd. Noor, Ahmad Jusoh, Abdul Halim Ghazali. 1990. 55pp. M\$15.

7. Trade and Development in Malaysia. Mohammed bin Yusoff, Suhaila Abdul Jalil, Muzafar Shah Habibullah, Shahril Abdul Karim. 1990. 142pp. M\$15.

PUSAT KOMPUTER

PENGARAH

Encik Mohamad Isa bin Mansor.

KAKITANGAN

Jumlah Kakitangan

KATEGORI A	13
KATEGORI B	19
KATEGORI C	16
KATEGORI D	20
JUMLAH BESAR	68

Perletakan Jawatan

Seorang Juruanalisa sistem tingkatan Biasa telah meletakkan jawatan pada 31.12.90 dan Juruanalisa Sistem Tingkatan Biasa (Kontrek) pada 30.4.91.

Perpindahan

Seorang Operator Mesin Prosesan Data telah berpindah ke Pusat Sains Asasi, Fakulti Sains dan Pengajian Alam Sekitar kerana jawatan baru.

Seminar/Bengkel/Kursus

Kursus komputer untuk pegawai-pegawai FAMA di adakan pada 11 - 12 November, 1990.

